# APPENDIX B: TECHNICAL ANALYSIS SUMMARY MEMORANDUMS

# Review of Existing Plans

Many parts of unincorporated San Mateo County have been the focus of planning and design studies in the past. Below is a table summarizing existing planning documents that support the Unincorporated San Mateo County Active Transportation Plan. While many of these planning documents focus on land use, operations, or environmental protection, the key takeaways for walking and bicycling in unincorporated parts of San Mateo County are listed in an additional column. Plans are organized by scale (local, county, regional, state), then alphabetically.

| Plan Name | Date | Goals Related to Active Transportation | Key Active Transportation Findings |
|---|---|---|---|
| **Local Plans** | | | |
| Bicycle and Pedestrian Plans for neighboring jurisdictions | Various | • Coordination between the Active Transportation Plan and bicycle and pedestrian plans in adjacent communities. | • Several cities and towns adjacent to unincorporated parts of the County have adopted pedestrian and bicycle plans<br>• During the development of plan recommendations, connections that would help to make walking and bicycling networks continuous between jurisdictions will be identified |
| North Fair Oaks Community Plan | 2011 | • Improve connectivity and reduce mobility barriers for all modes<br>• Improve health and safety<br>• Improve travel and transit connections between North Fair Oaks and surrounding communities within the region<br>• Provide safe and affordable housing to meet current and future needs<br>• Maintain a vital and viable mix of land uses<br>• Provide adequate infrastructure to support current uses and facilitate future development<br>• Promote development and redevelopment<br>• Maintain and generate local employment opportunities<br>• Require and encourage appropriate developments to support housing- and employment-generating land uses<br>• Improve access to park and recreational facilities<br>• Support the creation of new public transit routes and stations | • Presents design guidelines and standards for roadway and streetscape design, including lane widths, bicycle lane widths, sidewalks, landscaping, crosswalks, bulb-outs, street furniture, lighting, and art<br>• Proposes additional railroad track crossing locations<br>• Identifies expanded bicycle network and pedestrian network improvements<br>• Identifies pedestrian network improvements along Middlefield Road, El Camino Real, and 5th Avenue |

| Plan Name | Date | Goals Related to Active Transportation | Key Active Transportation Findings |
|---|---|---|---|
| Plan Princeton | Under-way | • Enhance coastal access, recreation, research, and education opportunities<br>• Support and expand coastal-dependent and coastal-related uses<br>• Provide facilities needed by the commercial fishing industry and recreational boaters<br>• Promote economic development<br>• Abate neighborhood blight and zoning violations<br>• Address parking, circulation, and infrastructure needs<br>• Identify and evaluate potential solutions to shoreline erosion problems<br>• Protect and restore water quality and sensitive habitats<br>• Maintain compliance with the California Coastal Act and state airport compatibility requirements | • Proposes updates to the land use policies, plans, and regulations in the area<br>• Identifies Princeton Avenue as an important on-street pedestrian and bicycle route<br>• Cypress Avenue connects parts of the community to trails to the North<br>• Identifies access to Pillar Point Bluff as an important consideration for active transportation planning |
| Stanford Bicycle Commuter Access Study | 2017 | • Examine opportunities and challenges for current bicycle commuters<br>• Present projects in neighboring communities that will increase the number of people who commute by bike | • Considers access to Stanford University from certain "bicycle sheds." Entrances on Stock Farm Road and Junipero Serra Boulevard may have implications for Unincorporated San Mateo County<br>• Identifies need for partnership with San Mateo County on Alameda de las Pulgas and Santa Cruz Avenue improvements |
| **County Plans** | | | |
| C/CAG Countywide Bicycle and Pedestrian Plan | 2011 | • A comprehensive countywide system of facilities for pedestrians and bicyclists<br>• More people riding and walking for transportation and recreation<br>• Improved safety for bicyclists and pedestrians<br>• Complete streets and routine accommodation of bicyclists and pedestrians<br>• Strong local support for non-motorized transportation | • Identifies pedestrian focus areas and bicycle facilities of countywide significance<br>• Design guidance for bicycle and pedestrian facilities that may need updating<br>• Recommends numerous on-street facilities for inland parts of the County, without classifying whether these would be bike lanes or bike routes |
| C/CAG Countywide Transportation Plan 2040 | 2017 | • Provide people with viable travel choices and encourage use of healthy, active transportation through a safe continuous, convenient, and comprehensive bicycling network that reduces reliance on the automobile for short trips<br>• Promote safe, convenient, and attractive pedestrian travel that promotes healthy, active communities while reducing reliance on the automobile for short trips<br>• Provide guidance on self-help transportation funding measures and other funding sources administered by C/CAG | • Identifies crossings of major highway barriers as a challenge for walking and bicycling<br>• Calls for increased bicycle infrastructure and support facilities<br>• Identifies key focus areas for walking, including schools, transit stations, shopping centers, and neighborhoods |

| Plan Name | Date | Goals Related to Active Transportation | Key Active Transportation Findings |
|---|---|---|---|
| Climate Action Plans for San Mateo County | 2012, 2013. Update underway | • Reduce County greenhouse gas (GHG) emissions by 17 percent below 2005 levels by 2020<br>• Reduce San Mateo's GHG emissions to 80 percent below current (2012) levels by 2050<br>• Includes a goal to Design for Mobility and Connectivity<br>• Includes a goal to provide opportunities for non-motorized and alternative travel | • Government Operations Climate Action Plan includes a commute alternatives program<br>• Recommends a traffic impact fee to fund active transportation improvements<br>• Recommends that new projects in North Fair Oaks, urban communities, and business districts to include improved design elements to enhance walkability and connectivity while balancing impacts on vehicle congestion.<br>• Recommends that new construction be required to install traffic calming and complete streets, including pedestrian and bicycle infrastructure and bicycle parking<br>• Recommends that large employers be required to implement a Commute Trip Reduction program<br>• Recommends Safe Routes to School programs |
| Community-Based Transportation Plans for San Mateo County's communities | Various | • Integrate infrastructure and policy recommendations from Community-based transportation plans into the Active Transportation Plans as appropriate. | • Plan for Daly City and Combined plan for Redwood City, North Fair Oaks, and East Palo Alto is underway<br>• Improved pedestrian and bicycle safety and amenities are identified as strategies in the low-income transportation plan<br>• Recommends free or discounted bicycles to low-income persons<br>• Painted crosswalks desired at intersections<br>• Pedestrian and Bicycle improvements desired on El Camino Real (countywide), including bike lanes, longer crosswalk times, widened sidewalks, improved landscaping and slower traffic<br>• Lighting desired at El Camino Real and 5th Avenue |
| Connect the Coastside: Evaluation of Recommended Alternative to Address Potential Future Transportation Deficiencies | Under-way | • Evaluate the impacts of future developments on future transportation systems and infrastructure<br>• Identify transportation improvements to address future deficiencies | • Comprehensive Transportation Management Plan (CTMP) that encompasses active transportation and other areas<br>• Recommends 10 proposed bicycle and pedestrian improvements in the Coastside area, totaling $49 million<br>• Identifies several pedestrian crossings of Highway 1 in the Coastside area<br>• Highlights some feasibility and design considerations for proposed projects |
| Green Infrastructure Plan | 2019 | • Implement infrastructure that uses natural features to capture and treat stormwater as it flows into bodies of water | • Identifies several green infrastructure elements that can be integrated into active transportation facilities.<br>• Recommends updates to several planning and policy documents to include provisions for green infrastructure<br>• Includes design guidelines and prioritized project locations for GI along streets in the public right of way. |

| Plan Name | Date | Goals Related to Active Transportation | Key Active Transportation Findings |
|---|---|---|---|
| Highway 1 Congestion & Safety Improvement Project: Final Preliminary Planning Study | 2015 | • Provide safer access to the beaches, coastal areas, and local communities along Highway 1 between Gray Whale Cove and Mirada Road in Miramar for vehicles, pedestrians, and bicyclists<br>• Alleviate traffic congestion along Highway 1<br>• Improve pedestrian and bicycle crossings for the residents and visitors along Highway 1 | • At five locations, proposes both a cost effective and comprehensive alternative to account for possible funding limitations<br>• General improvements include pavement resurfacing, drainage improvements, raised medians, pedestrian refuges, highway lighting, pavement markings, and signage<br>• States that the primary cause of historical collisions in the project area is speeding, and most proposed alternatives have design aspects to slow vehicles |
| Highway 1 Safety and Mobility Improvement Study San Mateo County Midcoast Communities: Princeton, El Granada and Miramar, CA | 2010 | • Increase pedestrian, bicycle, and vehicle safety along Highway 1<br>• Provide more transportation options for those that cannot, or choose not to use cars for local trips and commuting<br>• Reduce congestion and maintain road capacity<br>• Design a consistent highway corridor that supports the character and vitality of adjoining villages, recreation and natural surroundings<br>• Address the challenge of shoreline erosion, remaining sensitive to the dynamic coastal environment<br>• Reduce greenhouse gas emissions through the reduction of vehicle miles traveled | • Proposes a network of secondary alternatives for pedestrian and bicycle circulation, built upon existing and planned trails and other opportunity sites, such as El Granada's historic medians<br>• States that visitors to Highway 1 often park on the shoulder and cross the roadway at unmarked locations<br>• States that bicyclists often ride on the shoulder of Highway 1, as well as on completed portions of the Coastal Trail<br>• Proposes improvements to define roadway edges, improve intersection visibility, improve gateway design and wayfinding, construct roundabouts, manage access, and add walkways and bikeways<br>• Proposes short-, mid-, and long-term action plans for policies and infrastructure improvements |
| Highway 1 Safety and Mobility Improvement Study: Phase 2 | 2012 | • Increase pedestrian, bicycle, and vehicle safety along Highway 1<br>• Identify more transportation options for local and commuting trips for non-drivers<br>• Ensure safe and efficient traffic circulation<br>• Ensure that Highway 1 is a corridor that responds to both natural and built contexts | • Proposes improvements to medians in community areas, designated bicycle and pedestrian crossing locations, roundabouts, bicycle and pedestrian improvements on parallel routes in communities, and parking configurations for beach and trail access |
| Individual Plans for Countywide Trail Projects | Various | • Goals vary, but specific facility recommendations will be implemented into the Active Transportation Plan as appropriate | Trails include:<br>• Bay Area Ridge Trail<br>• California Coastal Trail<br>• Ohlone Portol'a Heritage Trail<br>• San Francisco Bay Trail<br>• San Francisco Public Utilities Commission Ridge Trail<br>• Skyline to Sea Trail |
| Local Coastal Program Policies | 2013 | • Generate an understanding of the County's Local Coastal Program, the policies and amendments of which are summarized through August 2012 | • Provides mandatory and recommended guidance on trail planning and design consistent with development policies for the Coastal Zone in unincorporated areas of San Mateo County |

| Plan Name | Date | Goals Related to Active Transportation | Key Active Transportation Findings |
|---|---|---|---|
| San Mateo County General Plan (Infrastructure Volume) | 1986 | <ul><li>Promote the provision and maintenance of public and private services and facilities that are basic to human habitation, including water supplies, wastewater management, transportation systems, and solid waste management</li><li>Promote the provision and maintenance of infrastructure improvements at all levels commensurate with the type and density of development anticipated in adopted land use plans</li><li>Promote the provision of infrastructure improvements in a manner that minimizes their environmental impacts, conserves energy, protects communities, and efficiently uses public funds</li></ul> | <ul><li>Touts the inexpensive, non-polluting, and healthful nature of biking and walking</li><li>Provides standards for Class I, II, and III bikeway updates</li><li>Calls for both short- and long-term bike parking and notes the success of bike lockers</li><li>Identifies barriers to walking such as freeways, railroads, and the expansion of automobile facilities</li><li>Supports improved sidewalk design and maintenance</li></ul> |
| San Mateo County Sea Level Rise Vulnerability Assessment | 2018 | <ul><li>Increase the resilience of the County's economy, environment, and communities through collaborative planning and projects</li><li>Map assets and future risk scenarios</li><li>Assess vulnerability by identifying the impacts of flooding, sea level rise, and erosion on people, structures, and community functions</li><li>Provide solutions that will lead to actionable results</li><li>Build awareness by sharing information</li><li>Build a collaborative Countywide network to support joint actions and solutions</li></ul> | <ul><li>Promotes the protection of transportation corridors to provide a buffer for sea level rise by elevating, fortifying, or relocating roadways to protect public transportation and roadway systems in the future</li><li>Proposes to, in the near term, develop emergency response plans in the County that includes active transportation</li><li>Encourages investing in public transit, the bicycle facility network, and pedestrian safety</li></ul> |
| San Mateo County Trails Master Plan | 2001 | <ul><li>Provide an updated Trails Plan with the latest detailed alignments</li><li>Link trails among existing and proposed trails in San Mateo County cities and parks, and to adjacent Counties</li><li>Develop a set of policies and guidelines that can be used during detailed trail planning to ensure adequate trails are constructed within constraints presented by the environment</li><li>Provide a plan for access for recreational and educational purposes to portions of the County where no access is currently available</li><li>Improve access to and along the coast</li><li>Provide recreational opportunities to area residents</li><li>Provide commuter routes for alternative types of transportation (e.g. bicycles)</li></ul> | <ul><li>States that most of the Bay Area Ridge Trail in San Mateo County is in unincorporated parts of the County and the Plan should look for opportunities to support it</li><li>Identifies 166 miles of existing trails and 139 miles of proposed trails across jurisdictions in the unincorporated County, categorized as County Trail Routes and Regional Trail Routes. Not all of these trails are County Park improvements.</li><li>Lists several design elements and policies for trails that have been considered and evaluated to maintain safety and minimize disturbance to the natural environment</li><li>Mandates that new trail routes should include Management Plans, described in detail in the document</li><li>Trail design and management guidelines were developed to address compliance with County General Plan and Local Coastal Plan policies.</li></ul> |

| Plan Name | Date | Goals Related to Active Transportation | Key Active Transportation Findings |
|---|---|---|---|
| **Regional Plans** | | | |
| Grand Boulevard Initiative | Ongoing | • Collaborate between cities, counties, and other local and regional agencies to improve the performance, safety, and aesthetics of El Camino Real.<br>• El Camino Real will achieve its full potential as a place for residents to work, live, shop and play | • The largest component of El Camino Real in unincorporated San Mateo County is located in North Fair Oaks.<br>• Significant focus on mixed-use development and urban design<br>• Calls for a pedestrian-oriented environment and improved streetscapes<br>• Calls for stronger pedestrian and bicycle connections with the corridor<br>• Provides Transportation Demand Management toolkit |
| Plan Bay Area 2040 | 2017 | • Identify transportation and land use strategies to enable a more sustainable, equitable, and economically vibrant future<br>• Reduce per-capita carbon dioxide emissions<br>• Plan for adequate housing<br>• Reduce adverse health impacts<br>• Direct development within urban footprint<br>• Provide equitable access in terms of housing, jobs, and transportation<br>• Ensure current and future economic vitality<br>• Increase the non-auto mode share<br>• Reduce vehicle operating and maintenance costs due to pavement conditions<br>• Reduce per-rider transit delay due to aged infrastructure | • Details a regional transportation investment strategy<br>• States that growth in Priority Development Areas is critical for the region to meet its housing and sustainability goals. North Fair Oaks is the only Priority Development Area in unincorporated San Mateo County<br>• States that housing costs are so high that even with improved low-cost transportation options, like walking, bicycling, and transit, combined housing and transportation costs for Bay Area residents is expected to increase<br>• States that, to reach and maintain a state of good repair of transportation infrastructure, the Bay Area will need to spend about $254 billion over the next 24 years. Coordination with State of Good Repair projects will help to stretch active transportation dollars further |
| **State Plans** | | | |
| Caltrans District 4 Bike Plan | 2018 | • Reduce the number, rate, and severity of bicycle and pedestrian involved collisions<br>• Increase walking and bicycling in California<br>• Maintain a high-quality active transportation system<br>• Invest resources in communities that are most dependent on active transportation and transit | • States that most State highways allow bicycling, but the lack of low-stress facilities and crossings results in most bicycling happening on local streets and bikeways<br>• Reports that Caltrans has established a target to triple bicycling by 2020 to reach a mode share of 4.5%, compared to 1.5% in 2000<br>• Recommends increasing bicycle parking at transit and park-and-ride locations because end-of-trip facilities are a critical element in supporting bicycling<br>• Provides a ranked list of recommended bicycle infrastructure projects for each county<br>• Proposes projects that include numerous segments of Class I trail along Highway 1<br>• Includes intersection improvements at 10 intersections along Highway 1 |

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August 12, 2019

To: Julia Malmo-Laycock
Organization: County of San Mateo
From: Lucas Woodward and Sara Rauwolf, Toole Design
Project: Unincorporated San Mateo County Active Transportation Plan

**Re: Existing Conditions Memorandum**

This memo presents an overview of existing walking and bicycling conditions in unincorporated San Mateo County. The purpose of this memo is to describe the area's physical and planning context, describe typical features of its existing active transportation system, and set the stage for infrastructure and programmatic recommendations that will expand the active transportation network and support its use by residents, workers, and visitors. A summary of key findings in this memo may be included as a chapter in the eventual Unincorporated San Mateo County Active Transportation Plan document (the Plan). Opportunities and challenges identified here will be evaluated in greater detail and addressed through infrastructure, policy, and programmatic recommendations in future phases of the Plan.

Existing conditions discussed in this memo include:

- Planning context
- Existing pedestrian and bicycle network, and transit access
- Connections to regional trails
- Bicycle and pedestrian counts
- Collision trends
- Existing plans and policies
- Opportunities

# Planning Context

## Plan Study Area

Unincorporated San Mateo County excludes incorporated cities and towns, encompassing diverse communities, each with its own priorities that result in varied bicycling and walking infrastructure countywide. These communities, located on both bay and ocean sides of the county, range in population from 210 people in Loma Mar to 15,454 in North Fair Oaks.[1] **Figure 1** shows the unincorporated communities listed below. The map highlights the most populated unincorporated communities in San Mateo County, specifically North Fair Oaks and the Coastside communities, which include Montara, Moss Beach, Princeton, El Granada, and Miramar totaling approximately 14,000 people. These areas are shown in greater detail on project maps with insets. In addition, the County has three large golf courses and tens of thousands of acres of rural lands used for parks, open space, agriculture and rural residential purposes.

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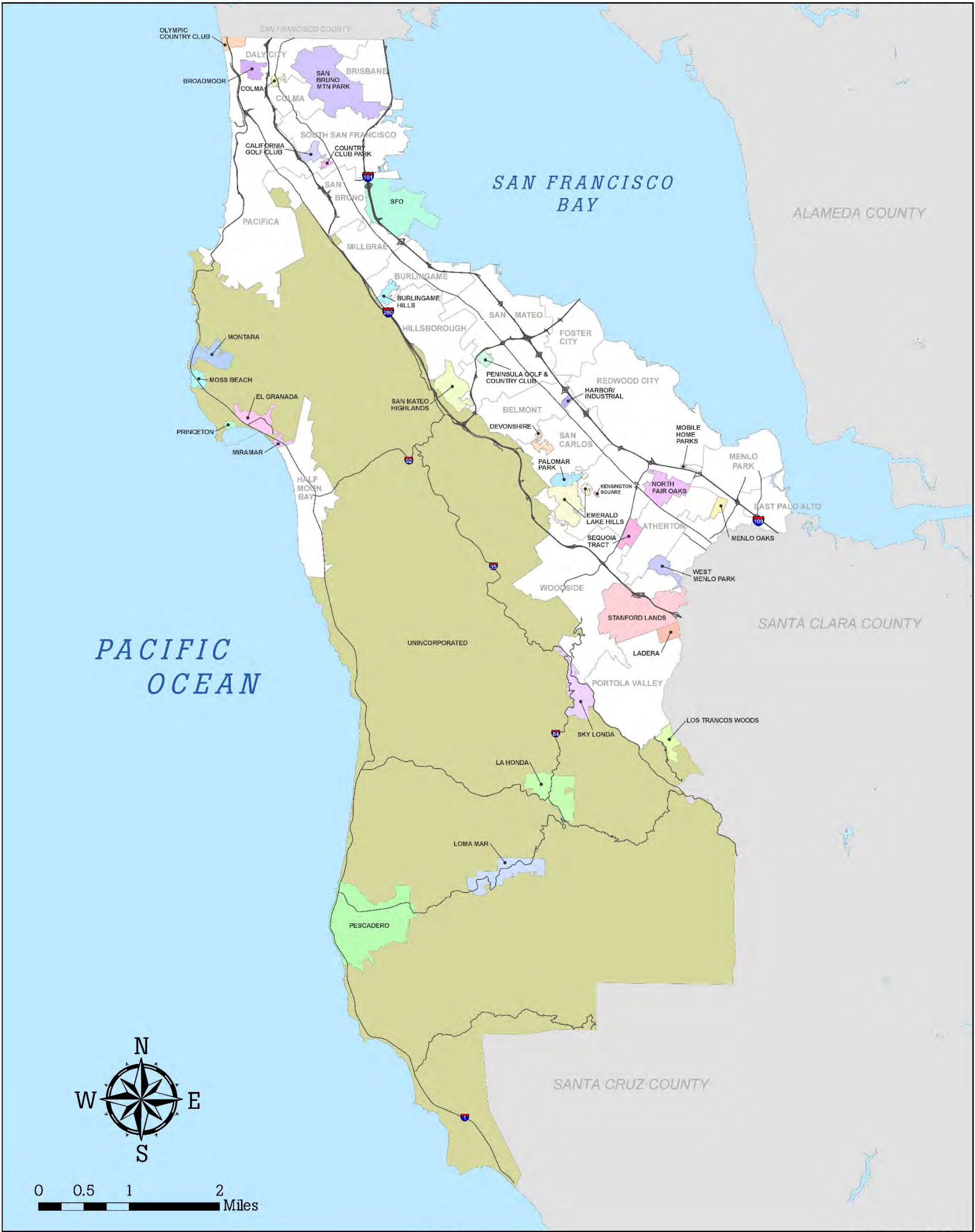[1] American Community Survey Five-year Estimates, 2017.

**Figure 1: Unincorporated Areas of San Mateo County**

The Planning Department recognizes 33 unincorporated areas in San Mateo County, and this plan will address walking and bicycling within them:

- Broadmoor
- Burlingame Hills
- California Golf Club
- Colma (unincorporated)
- Country Club Park
- Devonshire
- El Granada
- Emerald Lake Hills
- Harbor/Industrial
- Kensington Square
- Ladera
- La Honda
- Loma Mar
- Los Trancos Woods*
- Menlo Oaks
- Miramar
- Mobile Home Parks
- Montara
- Moss Beach
- North Fair Oaks
- Olympic Country Club
- Palomar Park
- Peninsula Golf and Country Club
- Pescadero
- Princeton-by-the-Sea
- San Bruno Mountain Park
- San Francisco International Airport
- San Gregorio
- San Mateo Highlands
- Sequoia Tract
- Sky Londa
- Stanford Lands
- West Menlo Park
- Other Unincorporated Areas

## Land Use and Character

With inviting beaches, lush redwood groves, varied topography, a mild climate, and San Francisco and Silicon Valley nearby, San Mateo County enjoys many natural assets that support active transportation. Over 750,000 residents live in San Mateo County, mostly in cities and towns in northern and eastern parts of the county. While these cities and towns each have their own distinct character, San Mateo County's unincorporated areas also encompass a wide range of communities, each with unique physical challenges, engineering constraints, and community priorities.



**Figure 2: Two women enjoy a bike ride along the San Mateo County coast**

Unincorporated San Mateo County includes two densely populated communities – Broadmoor and North Fair Oaks, unincorporated pockets of suburban areas, such as West Menlo Park and Emerald Lake Hills, coastal communities like El Granada and Montara, and more remote inland communities like La Honda and Pescadero. While there are few major employment centers in unincorporated parts of San Mateo County, there are pockets of

industrial land near the Half Moon Bay Airport and unincorporated Belmont, neighborhood commercial areas in some communities, and large agricultural areas between Highway 1 and the Santa Cruz Mountains.

### Parks and Open Space

San Mateo County has numerous open space areas, with over 60 percent of the County's land area categorized as Forest, Open Space, Parks, or Recreation.[2] These areas, owned and managed by either the County or State, provide an excellent setting for recreational walking and bicycling. San Mateo County also has numerous beaches, attracting many people to walk and bike along the coast.

## Demographics

This section draws on the U.S. Census American Community Survey to provide basic demographic information on unincorporated San Mateo County. Demographic data for unincorporated San Mateo County were determined by analyzing data for all of San Mateo County and subtracting that from the incorporated cities and towns.[3]

While Census generally provides the most consistent data available on demographic characteristics, it has some limitations. First, Census data for transportation is for work trips only, which is less than 20 percent of all trips statewide. Work trips tend to be the longest trips, and the often shorter trips made for shopping, dining, and socializing, may pose great opportunities for active transportation.[4] Also, some tables that report data for households, such as household income and vehicle ownership, can misrepresent income or vehicle ownership by person in higher cost-of-living areas where it is common for people to live with roommates. Finally, due to the low populations of Census-designated places in San Mateo County except North Fair Oaks, margins of error can be high.

### Age

The population in unincorporated San Mateo County has been steadily increasing. The population has increased by 5.3 percent over five years from 62,000 people in 2012 to over 65,000 people in 2017.[5] The oldest and youngest residents of an area are often less comfortable walking and bicycling than those in other age groups[6], and 41 percent of the County's population is older than 65 or younger than 20. The age distribution is presented in **Figure 3**.
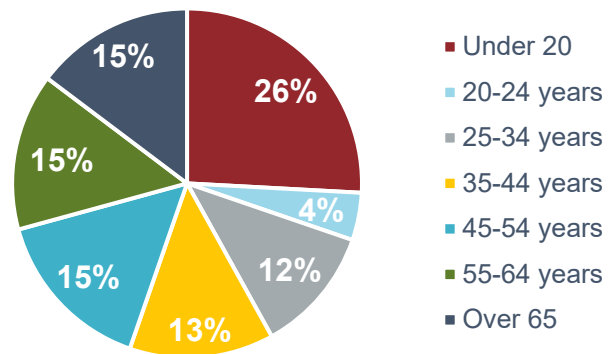


**Figure 3: Age of residents in unincorporated San Mateo County**

### Race and Ethnicity

The racial breakdown of unincorporated parts of San Mateo County is similar to that of the county as a whole. About 68 percent of the population is White, 13 percent Asian, one percent Black, and 14 percent Some Other Race, with about four percent identifying as two or more races. But there are significant differences among communities. In Broadmoor, about half the population identifies as Asian, and in North Fair Oaks, 37 percent identify as Some Other Race.

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[2] San Mateo County GIS Enterprise Data
[3] Other communities are Census-designated places and can be studied directly.
[4] California Household Travel Survey
[5] American Community Survey Five-year Estimates, 2017.
[6] NACTO, Designing for All Ages and Abilities, 2017.

The US Census describes people of Hispanic or Latino descent as an ethnicity, not a race. Therefore, people who identify as Hispanic may also describe themselves with one or more racial categories. Throughout the county, people of Hispanic ethnicity are generally evenly split between those identifying as White and those identifying as Some Other Race; 70 percent of the population in North Fair Oaks is Hispanic. **Figure 4** presents the racial and ethnic breakdown in North Fair Oaks versus in all unincorporated areas of San Mateo County.
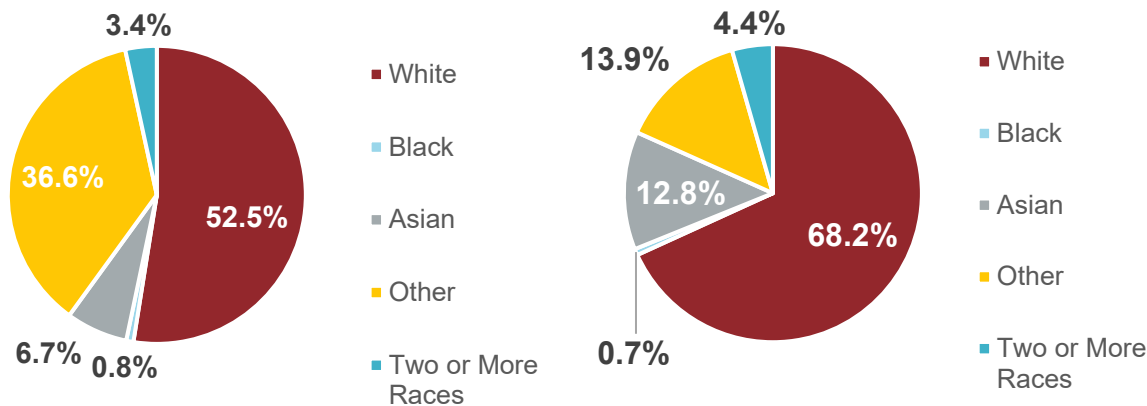
**Figure 4: Racial breakdown of North Fair Oaks and all unincorporated areas**

## Travel Patterns

### *Vehicle Ownership*

Only three percent of households in unincorporated San Mateo County do not own a vehicle, while 75 percent of households own two or more vehicles (
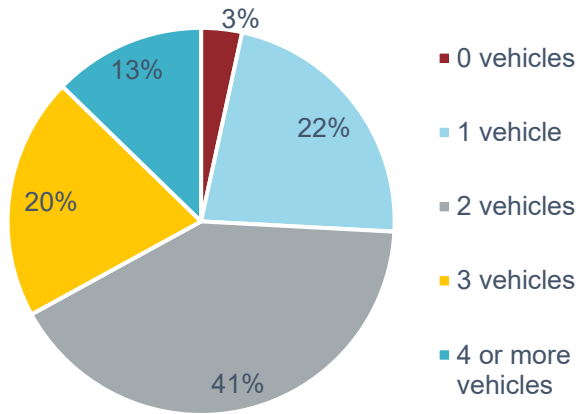
**Figure 5: Vehicle Ownership in Unincorporated San Mateo County**
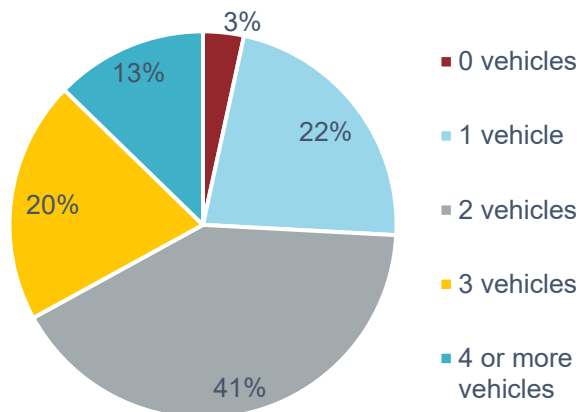
Figure 5). Of Census-designated places, North Fair Oaks has the highest rate of car-free households in the County at 3.4 percent. While vehicle ownership is often correlated with income, it can also reflect communities where walking, biking, and transit infrastructure is insufficient to provide other transportation options.

*Commute Characteristics*

Approximately 11 percent of unincorporated San Mateo County residents walk, bike, or take transit to work: five percent of people commute on transit, four percent of people walk to work, and two percent bike to work (**Figure 6**). Commute trips only comprise around 15 percent of household trips, per the California Household Travel Survey (CHTS), but they are nonetheless important to understand. Commute data are very rich with high sample size, and commute trips tend to be longer than other trips, with a significant impact on residents' quality of life. As shown in **Figure 6**, most residents drive to work.



**Figure 6: Mode Share for Unincorporated San Mateo County**

Today's commuting patterns, presented in **Figure 7**, indicate the possibility of mode shift for those whose commute travel time is less than 10 minutes.[7] This is an important commuting characteristic for active transportation planning, as most driving trips of less than 10 minutes are within a comfortable distance for walking or bicycling, as well as some trips from 10-24 minutes. These data suggest that at least 9 percent, and possibly up to 47 percent commute trips could be made walking and bicycling.

Non-work trips are made to visit friends and family or for trips to school, errands, entertainment, outings, recreation, and medical trips.[8]  While California Household Travel Survey (CHTS) data cannot be



**Figure 7: Commute Length for Unincorporated San Mateo County**

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[7] Per the 2017 U.S. Census American Community Survey 5-year Summary, 9 percent of unincorporated San Mateo County residents have a commute of less than 10 minutes.

[8] 85-90% range references the National Household Travel Survey (15 percent) and California Household Travel Survey (9.9 percent).

analyzed separately for unincorporated San Mateo County, non-work trips are more likely to be made using active transportation. This is because non-work destinations, such as an errand or a friend's house, are likely to be located closer to home. This Plan will reflect recommendations for active transportation for all trip purposes.

*Tourism and Recreation Trips*

While walking and bicycling for transportation are important to plan for, recreational walking and bicycling likely account for a large portion of trips in unincorporated San Mateo County. Recreational trips are not among those presented in the mode split above, but recreational walking and biking are common in unincorporated San Mateo County, especially along the coast and in the hills on weekends. The importance of recreational trips is borne out in the County's Count data, which show that pedestrian and bicycle counts in coastal communities like Miramar and towns like Portola Valley that are adjacent to unincorporated areas are higher on weekends than weekdays. By contrast, weekend pedestrian and bicycle counts at locations within more urbanized areas of San Mateo County, such as Millbrae, are not generally any higher than weekday counts.
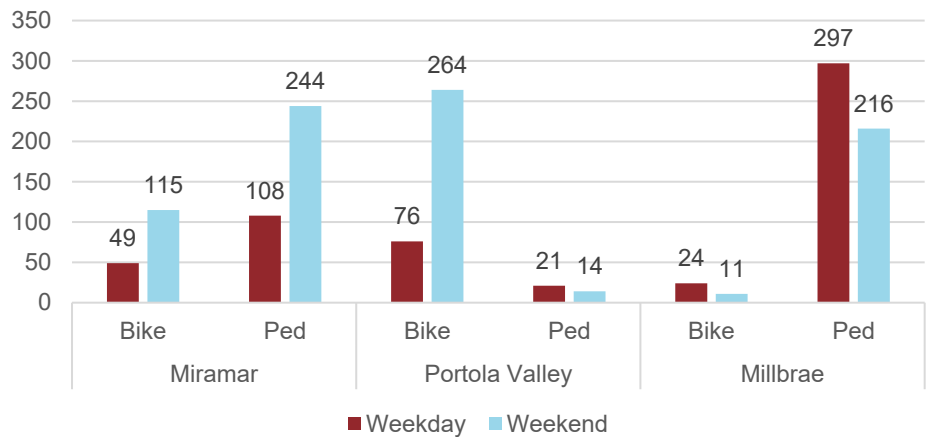


**Figure 8: Weekday and weekend counts in San Mateo County**

Recreational bicyclists include both avid cyclists who are comfortable sharing roadways with higher-volume or -speed traffic and more casual bicyclists who ride for exercise and enjoyment but who may be less comfortable riding in mixed traffic. Off-street facilities like the Crystal Springs Trail and the Coastal Trail are welcoming for the latter group. Most recreational walks include trips on other modes to reach a trail, park, or other walking destination. Recommendations as part of the Plan will include gap closure projects to expand the existing bicycle and pedestrian networks to better serve off-street facilities.

*Connections to Regional Trails*

The County Trails plan identifies 166.5 miles of existing recreational trails in San Mateo County and identifies over 300 more miles of proposed trails. While this Active Transportation Plan is focused on sidewalks, on-street facilities, and shared use paths, it may include recommendations to improve access to trailheads and design guidance for recreational trail facilities. Many trailheads are in the hills where access includes travel on higher-speed roadways, and this planning effort can develop policies to improve connections to them.

# Existing Bicycle, Pedestrian, and Transit Facilities

## Existing Pedestrian Network

Pedestrian networks are comprised of sidewalks, trails, streets and roads, roadway crossings, and overcrossings. These facilities should be connected, protected, and properly designed to accommodate the needs of people walking. Due to the large geographic area of San Mateo County, the types of issues typical to pedestrian networks are often highly localized, relating to sidewalks and crossing opportunities nearest particular destinations.

### Typical Challenges

Several types of issues affect the walking environment in San Mateo County.

**Lack of sidewalks and sidewalk amenities:** The need for sidewalks depends on the land use context. In denser, more urban areas like Broadmoor and North Fair Oaks, sidewalks may be appropriate on all streets. But there are gaps in many of these locations. This plan will recommend priority locations for sidewalk investments.

In other areas, quiet streets may actually be the type of pedestrian infrastructure that is needed; **Figure 8** provides a possible example in the Coastside.

**Lack of crossing opportunities:** In some parts of the County, busy roadways, railroads, and other features are barriers for pedestrians. Highway 1, which is maintained by Caltrans, is one example. Traveling south from Pacifica, the first signalized intersection is at Capistrano Road, beyond the communities of Montara and Moss Beach, and the next is not until Coronado Street, almost a mile to the south. Instead of walking, people may cross midblock or drive short distances just to avoid barriers. Providing traffic control devices such as signals, pedestrian signals, and roundabouts may be options recommended for further study in the Plan.

**Lack of street trees:** Trees can enhance the walking experience by providing shade and scenic interest, especially in warm, sunny locations.



**Figure 9: In areas without sidewalks, quiet streets to walk on can be an Important – and safe – part of the pedestrian network**



**Figure 10: People crossing with the help of a rectangular rapid flashing beacon (RRFB) in North Fair Oaks**

**High speed traffic:** High traffic speeds can negatively impact people walking and bicycling. Whether people are walking, biking, or driving, high vehicle speeds give less time to notice and respond appropriately to other roadway users or changing roadway conditions. Collisions that do occur at high speeds are also more severe. Also, even with separation, walking and bicycling next to high-speed traffic can create a loud and uncomfortable environment for people walking and bicycling. For these reasons, speed is an important determinant of the appropriate type of bicycle facility for a given street.

**Lighting and Visibility:** As discussed in the Collision Analysis, pedestrian collisions disproportionately occur during evening hours. Lighting can be a complicated issue for the County to address, due to its management by several public and private agencies, but improved lighting in appropriate settings may help to improve pedestrian safety. This plan will also identify policy and infrastructure recommendations to improve visibility.

**Condition of existing facilities:** The Plan will make recommendations for areas where pedestrian facilities do not meet the Americans with Disabilities Act (ADA) standards, as identified through outreach and existing data sources.

*Considerations for the Active Transportation Plan*

In order to create a safe and comfortable pedestrian network for all users, the Plan will consider, among other things:

- **Existing sidewalks and walking paths:** While sidewalks may not be appropriate at every location in unincorporated San Mateo County, the Plan will propose closing sidewalk gaps where appropriate to ensure that people can walk freely on connected facilities.
- **Connections to existing and proposed trails:** Trails are used by people walking, and are an important aspect to the quality of life in San Mateo County. This Plan should help to provide safe and complete connections to trailheads, so people may not need to use their vehicles for each outing.
- **Crosswalk locations:**  The Plan will consider crosswalks at intersections as well as mid-block locations to help ensure that people can walk to their desired destinations without compromising their safety. Recommendations may include enhanced crossing infrastructure, like Rectangular Rapid Flashing Beacons (RRFBs) where appropriate.
- **Access to important destinations:** Due to the countywide scale of this planning effort, and the importance of highly localized features to the pedestrian network, it will be important to focus improvements on locations that the community identifies as important destinations during the Plan's public engagement activities.

## Existing Bicycle Network

San Mateo County's bicycle network consists of bike lanes, bike routes, and trails. Some facilities, such as the California Coastal Trail, are enjoyable for people of all ages and abilities to use. Other facilities, such as bike lanes along major arterials with high traffic volumes and speeds, can be stressful for even the most experienced riders.

The existing bicycle network in San Mateo County is comprised of the following facilities.

### Class I Trails

Class I trails are two-way facilities that are physically separated from motor vehicle traffic and used exclusively by bicyclists, pedestrians, and other non-motorized users. Trails provide low-stress facilities for bicyclists and pedestrians but still interact with motor vehicles at driveways and intersections. Class I trails in unincorporated San Mateo County include the California Coastal Trail near El Granada and the Sawyer Camp Trail west of I-280.



**Figure 11: The California Coastal Trail, a Class I trail, in El Granada**

### Class II Bicycle Lanes

Class II bicycle lanes provide an exclusive space for bicyclists in the roadway. Bicycle lanes are established by painting lines and symbols on the roadway surface. Bicycle lanes are for one-way travel and are normally provided in both directions on two-way streets and/or on one side of a one-way street. Bicycle lanes may be used temporarily by vehicles accessing parking spaces and entering and exiting driveways and turn pockets at some intersections. Some "buffered bicycle lanes" include a painted buffer zone to further separate the bicycle lane from the adjacent vehicular travel lane.

### Class III Bicycle Routes

Class III bike routes have signage that indicate that the roadways are shared with motor vehicle traffic. These facilities can be comfortable for people of all ages and abilities to ride on if traffic speeds and volumes are low. These low-stress facilities are called bicycle boulevards in some communities. However, some bike routes exist on higher speed roadways and may be demarcated with signage or shared lane markings.

### Class IV Separated Bicycle Lanes

Class IV bicycle lanes are separated from motor vehicle traffic with both vertical and horizontal features such as planters or parked vehicles and are distinct from the sidewalk. These facilities provide the greatest separation of the on-street facility types and are generally comfortable for people of all ages and abilities. There is currently one Class IV separated bicycle lane on Chilco Street in in Menlo Park but none in unincorporated areas of the county.

### Choosing appropriate bicycle facilities

The appropriate bicycle facility depends on land use and transportation context. In general, as traffic speeds and volumes increase, more separation from traffic is needed to accommodate bicyclists of all ages and abilities. When appropriate bicycle facilities are not provided, people may resort to bicycling on the sidewalk.

Through the Active Transportation Plan, San Mateo County seeks to create a bicycle network that can serve users of all skill levels and build upon the successes of the current network. **Table 1** provides an overview of the existing bicycle network in unincorporated San



**Figure 12: A bicyclist in North Fair Oaks opts for the sidewalk instead of the street**

Mateo County, as well as the proposed network from C/CAG's 2011 Comprehensive Bicycle and Pedestrian Plan (CBPP). That plan's recommendations for unincorporated areas were developed in partnership with the County of San Mateo. Many on-street facilities proposed in the CBPP were left unclassified and may be suitable for bike lanes or bike routes. This planning effort will help to define these unclassified routes and assess the recommendations in the 2011 plan to ensure that they are still relevant for the County. The Comprehensive Bicycle and Pedestrian Plan will soon be updated and recommendations from this planning effort will inform the update.

**Table 1: Existing and Proposed Bikeways**

| Facility Type | Existing Mileage | Mileage Proposed in 2011 C/CAG Plan |
|---|---|---|
| Class 1 Trail | 8.3 | 16.3 |
| Class 2 Bike Lane | 13.7 | 4.7 |
| Class 3 Bike Route | 2.0 | 31.0 |
| Class 4 Separated Bikeway | -- | -- |
| Unclassified On-Street Facility | | 50.1 |

*Considerations for the Active Transportation Plan*

A bicycle network should be safe, comfortable, and connected to successfully serve all bicyclists. To accomplish this, the Plan will consider, among other things:

- **Existing connectivity issues**: Jurisdictional boundaries are unimportant to the experience of a person bicycling. This plan should address connectivity issues within unincorporated parts of the county and identify issues that may exist within incorporated areas to ensure that bicycle facilities don't disappear at any point and are fully connected.
- **Low-stress facilities**: While some people are confident bicycling on any street, any increases in bicycling in the county will likely come from those people who are less comfortable sharing traffic with fast-moving traffic. Facilities should be designed so people of all ages and abilities can confidently bike in San Mateo County.
- **Safe routes to schools:** Walking and bicycling to school is associated with many positive outcomes for children, and community members mentioned the importance of school connections.
- **Priorities for other bicycle planning efforts in the County:** Other planning documents like the CBPP and the Caltrans District 4 Bicycle Plan have established many priorities for bicycling in San Mateo County.

Recommendations will include infrastructure, program, and policy recommendations.

Figure 13: Existing and proposed bikeways in San Mateo County

**Bicycle Facilities**

**Proposed Bicycle Facilities**
- – – – Class I: Trails
- – – – Class II: Bicycle Lane
- – – – Class III: Bicycle Route
- – – – Unclassified On-Street

**Existing Bicycle Facilities**
- ——— Class I: Trails
- ——— Class II: Bicycle Lane
- ——— Class III: Bicycle Route
- ——— Class IV: Separated Bicycle Lane

**Other**
- Park
- School
- Water
- Incorporated
- San Mateo County
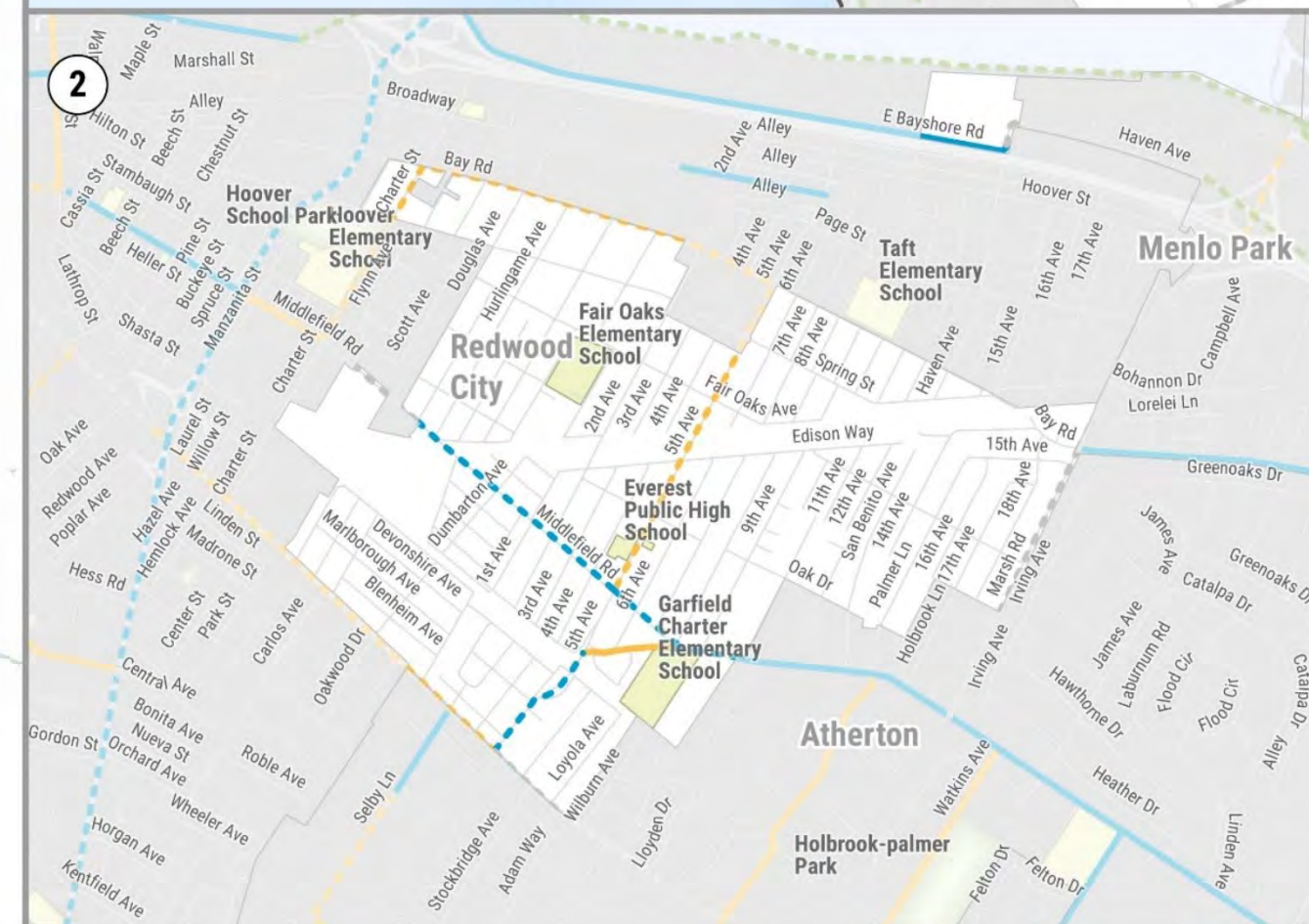- Unincorporated San Mateo County
- County Boundary

## Existing Transit Network

Ensuring safe and convenient access to transit is an integral component of a successful active transportation plan. San Mateo County is served by Caltrain, SamTrans, and BART. All of these modes of transportation accommodate bicycles, and their transit stations are important focal points of pedestrian activity.

### *Caltrain*

There are no Caltrain stations located within unincorporated parts of the County, but many stations are close enough to unincorporated communities to serve unincorporated areas. In particular, the Atherton and Redwood City Caltrain stations are located within one mile of parts of North Fair Oaks and can easily be accessed on a bicycle or feeder buses. Over 7,000 of Caltrain's approximately 65,000 weekday passengers ride their bikes to a station, and bicycles are accommodated on specific train cars with facilities to secure bicycles. Caltrain has developed a Bicycle Parking Management Plan, which identified a need for both additional bike parking and bike parking that is better suited to user preferences. The agency is currently working to implement the plan's recommendations.

### *SamTrans*

SamTrans' 17 bus route serves the Coastside communities, as well as the school day-only 18 route. North Fair Oaks is served by several bus routes, most notably the frequent ECR, 296, and 397 routes. SamTrans also operates service in other unincorporated parts of the County; many of these routes connect neighborhoods with Caltrain stations. All SamTrans buses are equipped with bicycle racks, which hold two bicycles, except for the 60-foot articulated buses which hold up to three bicycles. Two additional bicycles are allowed inside the bus, depending on passenger loads.



**Figure 14: SamTrans Buses Accommodate Bicycles on Front Racks**

### *BART*

The Colma BART station is located within an unincorporated pocket of San Mateo County, though it is a very small area with few residents or businesses. Nonetheless, this station serves Broadmoor, one of the more populous Census-designated places in San Mateo County. Eight on-demand BikeLink lockers are available at this BART station, and bicycles are permitted on all BART trains. The San Francisco International Airport BART station is also located in unincorporated San Mateo County and serves passengers traveling to and from SFO. **Figure 15** presents a map of existing transit routes in the county. Transit has the potential to extend the range of active transportation trips to make them a reasonable alternative to driving, even for longer trip distances. This Plan should develop recommendations to ensure that people walking and biking can safely access transit stops and stations, focusing on established walk and bicycle sheds. The Plan should also consider the need for bike parking at transit stations.

**Figure 15: Transit Routes in San Mateo County**

14

# Bicycle and Pedestrian Counts

Each year, San Mateo County collects bike and pedestrian counts at key locations throughout the county. These data, presented in **Figure 16** and **Figure 17**, inform where bicycle and pedestrian infrastructure should be evaluated to determine if improvements are needed to serve existing volumes and support bicycling and walking increases. Counts are taken either at weekdays during peak commute hours, weekends between 12:00 and 2:00 pm, or at both times, consistent with methodology from the National Bicycle and Pedestrian Documentation Project.

Examples of high-volume locations include Middlefield Road in North Fair Oaks, which has relatively high pedestrian volumes, and Mirada Road in El Granada, which has relatively high bicycle volumes. The policy and program recommendations for this planning effort will include an assessment of current count practices to identify opportunities for the countywide count to help address active transportation goals.

## Pedestrian Counts

*Average of counts from 2016-2018*

0-200 lower limit    1200-1400 upper limit

## Bicycle Facilities

**Proposed Bicycle Facilities**
- Class I: Trails
- Class II: Bicycle Lane
- Class III: Bicycle Route
- Unclassified On-Street

**Existing Bicycle Facilities**
- Class I: Trails
- Class II: Bicycle Lane
- Class III: Bicycle Route
- Class IV: Separated Bicycle Lane

## Other

- Park
- School
- Water

- Jurisdictions
- Unincorporated
- San Mateo County County Boundary

**Figure 16: Pedestrian Counts in San Mateo County, 2016-2018**

**Bicycle Counts**
*Average of counts from 2016-2018*

0-20 lower limit     120-140 upper limit

**Bicycle Facilities**

**Proposed Bicycle Facilities**
- - - Class I: Trails
- - - Class II: Bicycle Lane
- - - Class III: Bicycle Route
- - - Unclassified On-Street

**Existing Bicycle Facilities**
—— Class I: Trails
—— Class II: Bicycle Lane
—— Class III: Bicycle Route
—— Class IV: Separated Bicycle Lane

**Other**
- Park
- School
- Water
- Jurisdictions
- Unincorporated
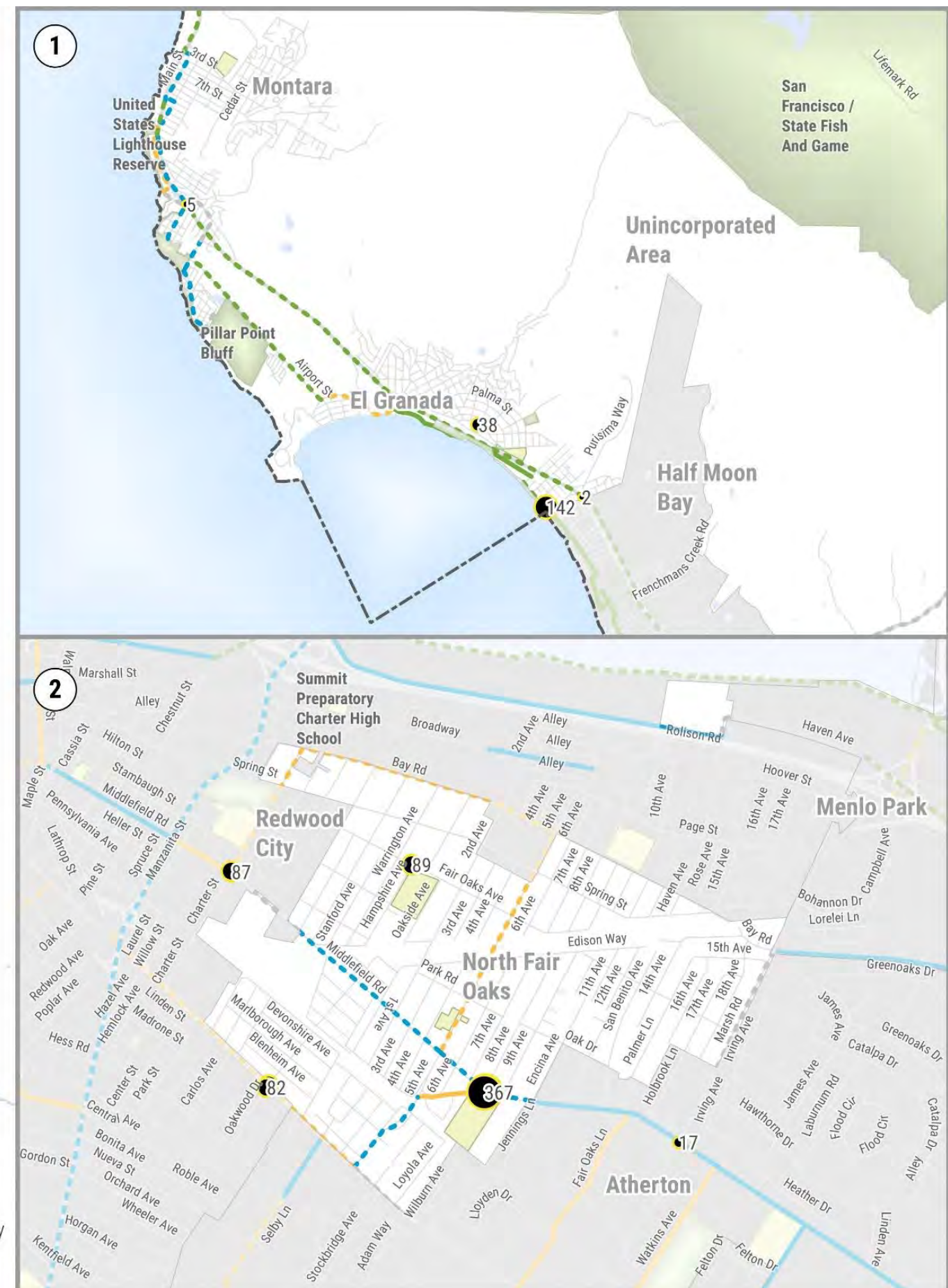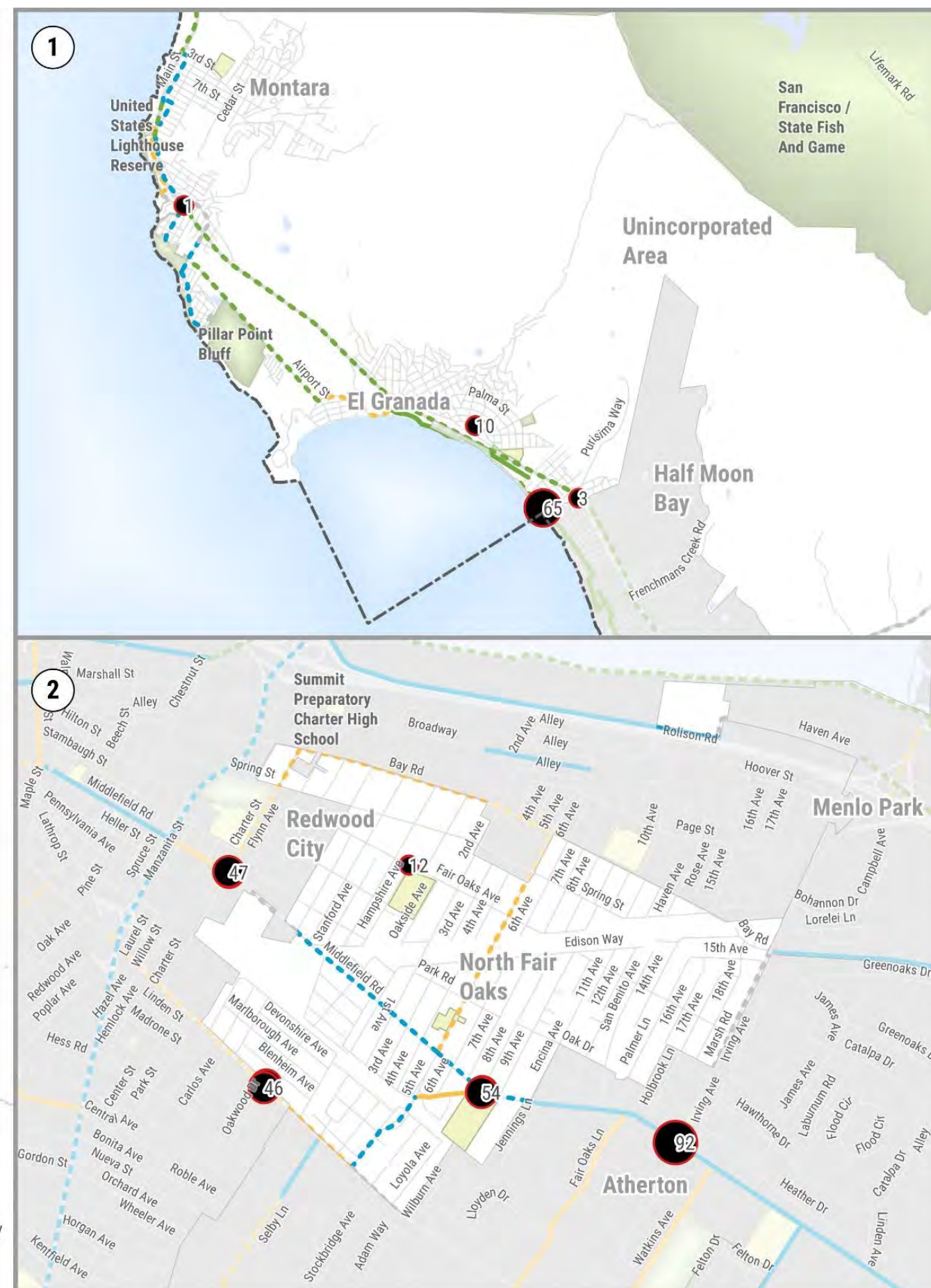- San Mateo County County Boundary

**Figure 17: Bicycle Counts in San Mateo County, 2016-2018**

# Collision Trends

This plan will identify strategies to reduce the frequency and severity of collisions involving bicycles and pedestrians. The first step to addressing these collisions is understanding where, when, why, and how they occur. The following analysis aims to help County staff and the community better understand the bicycle and pedestrian collision history in San Mateo County. The analysis reports patterns over time, crash severity, primary collision factors, and other trends. These data were gathered from the University of California's Transportation Injury Mapping System (TIMS). This analysis of collision trends draws on five years of collision data (2013 – 2017), presented in **Figure 19**.

The following sections discuss several aspects of bicycle and pedestrian collisions. Sections detailing pedestrian collisions and bicyclist collisions follow separately, as their patterns are quite different. Bicyclists and pedestrians use different facilities, travel at different times of day, and travel at different speeds. When considering TIMS data, it is important to recognize that collision records rely on an officer's assessment of what occurred in a collision and how they interpret California law. This analysis does not include any collisions not reported to law enforcement or any near misses.
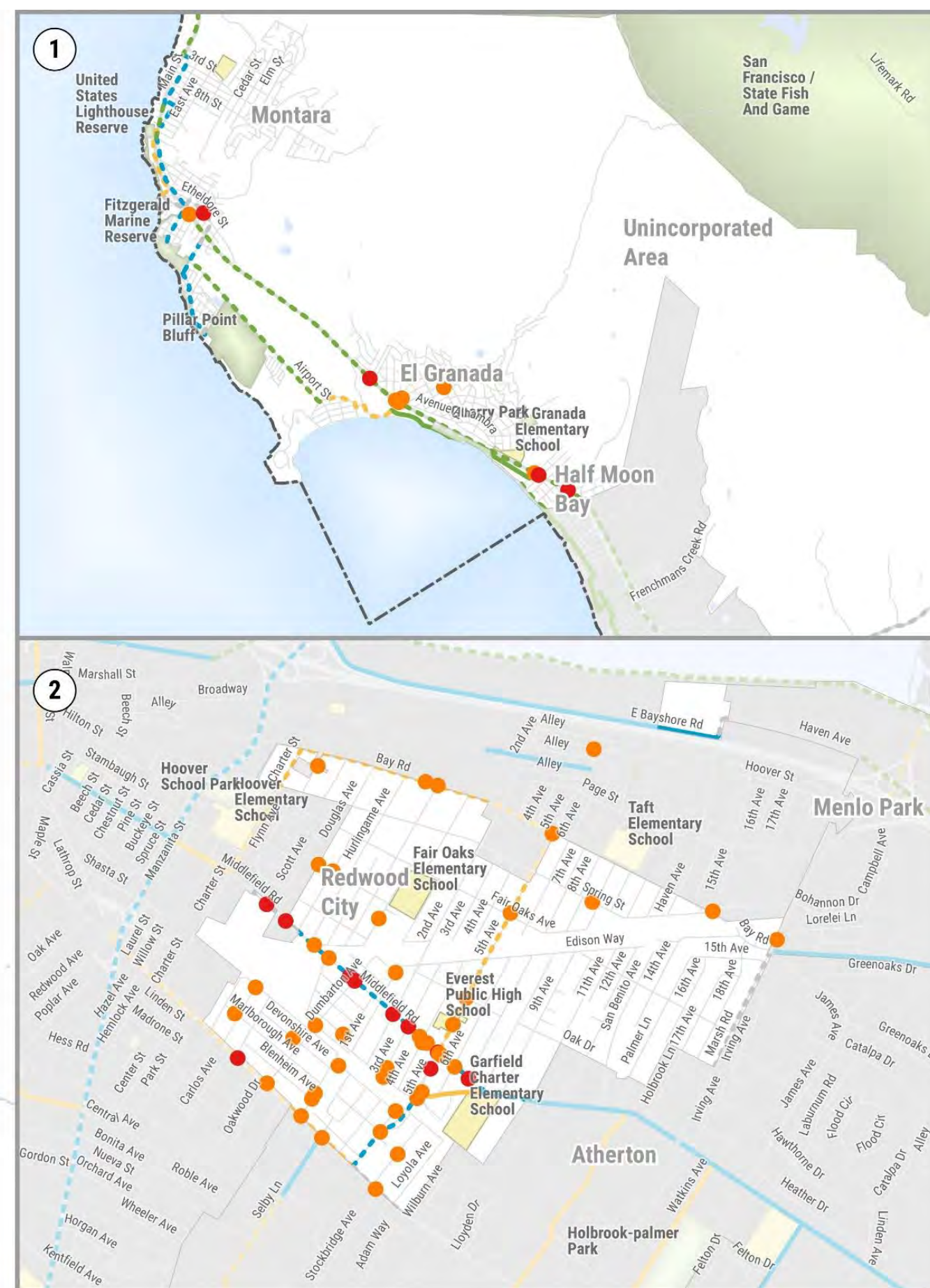
**Figure 18: Distribution of Bike and Pedestrian Collisions in Unincorporated San Mateo County**

After an initial decrease in bicycle collisions from 2013 to 2014, the number of bicycle collisions increased by over 10% from 2014 to 2017. In comparison, the number of pedestrian collisions has fluctuated from year to year, slowly growing from 2014 to 2016 and then dropping from 14 to nine from 2016 to 2017. See **Figure 18** for collision locations.
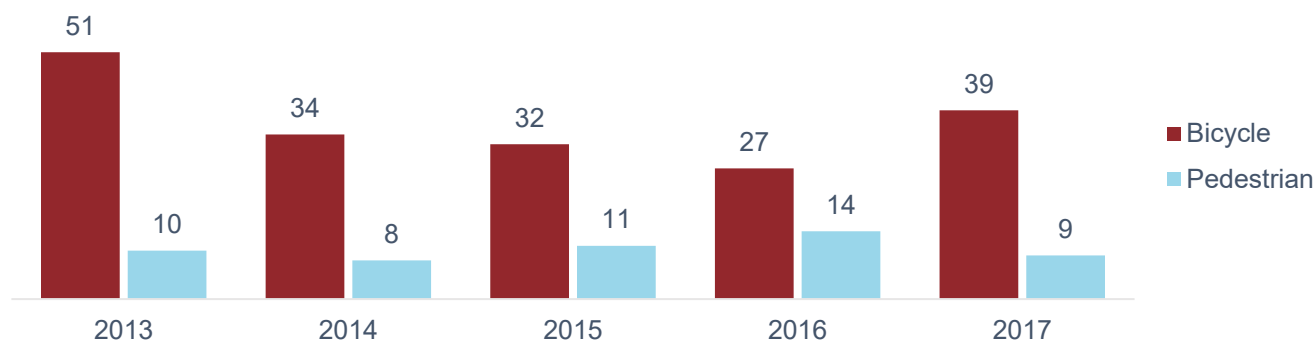
**Figure 19: Bicycle and Pedestrian Collisions in Unincorporated San Mateo County, 2013-2017**

*Day of Week*

While the number of pedestrian collisions remained consistent regardless of day of the week, 47 percent of bicycle collisions occurred on a Saturday or Sunday (**Figure 20**). This high percentage of weekend bicycle collisions suggests that many of these can be attributed to recreational bicycling. The prevalence of collisions during recreational bike rides suggests that safety education and outreach, potentially in partnership with organizers of group rides may be effective strategies to improve bicyclist safety. This also suggests that safety enhancements on popular recreational facilities may be as important as physical safety improvements on streets that connect to destinations.
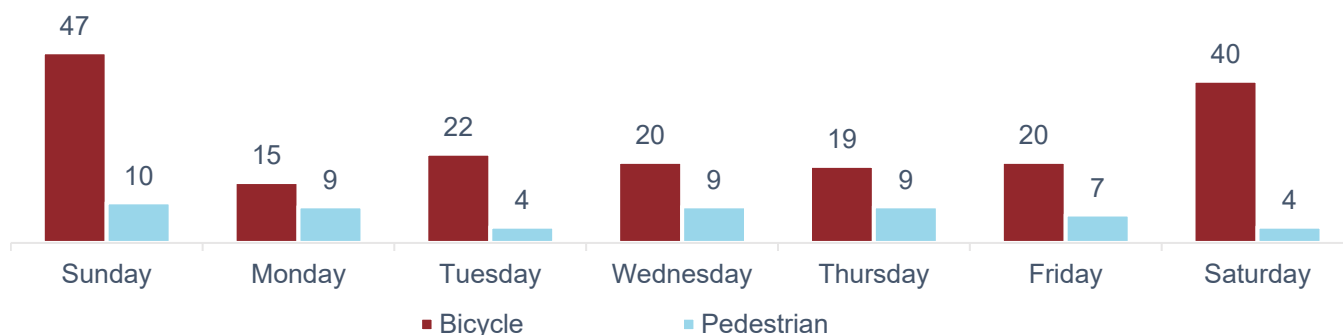
**Figure 20: Bicycle and Pedestrian Collisions by Day of Week**

## Pedestrian Collisions

*Crash Severity*

As shown in **Figure 20**, there were 52 pedestrian collisions over the five-year period analyzed, resulting in 46 visible injuries and six deaths. The TIMS database only focuses on collisions where injuries are recorded, so there are likely more unreported non-injury collisions, as well as undocumented near misses.
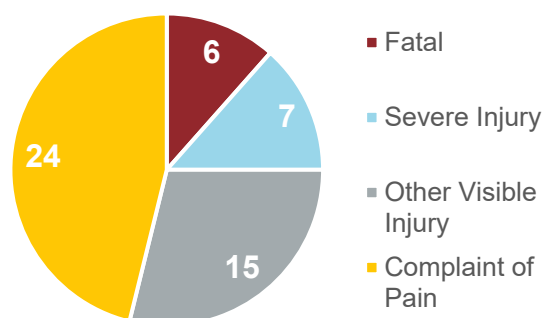
**Figure 21: Pedestrian Crash Severity**

## Primary Collision Factors and Locations

**Table 2** indicates the most common primary collision factors for pedestrian collisions in unincorporated San Mateo County. The most common pedestrian collision factors were violations of the pedestrian right of way and pedestrian violations. 30% of pedestrian collisions were caused by a pedestrian right of way violation, implying that a bike or motor vehicle fails to yield when a pedestrian has the right of way. 25% of pedestrian collisions were caused by a pedestrian violation, an example which is crossing the street against a traffic signal. Another 13% of pedestrian collisions were caused by improper turning, referring to driver errors like turning right when right turns on red are restricted.

**Figure 22** presents pedestrian locations when a collision occurred. Thirty of the 52 pedestrian collisions occurred when a pedestrian was crossing the road, and over 40% of these crossing collisions occurred when a pedestrian was crossing the road at a location outside of a crosswalk. This implies that the need for additional pedestrian crossing locations.

**Table 2: Primary Pedestrian Collision Factors**

| Primary Collision Factor | Number |
|---|---|
| Pedestrian Right of Way | 16 |
| Pedestrian Violation | 13 |
| Improper Turning | 7 |
| Unsafe Speed | 6 |
| Unsafe Starting or Backing | 4 |
| Unknown | 3 |
| Automobile Right of Way | 2 |
| Improper Passing | 1 |

*Source: TIMS, 2013-2017*



**Figure 22: Location of Pedestrian During Collision**
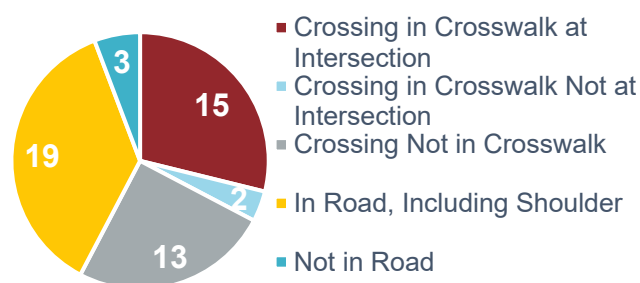
## Lighting

The presence of lighting appears to influence the overall severity of pedestrian collisions. Analysis of lighting in all pedestrian collisions (**Figure 23**) versus in fatal and severe pedestrian collisions. **Figure 24** shows that over 60% of pedestrian collisions occurring without streetlights result in severe or fatal injury. Safety benefits of lighting are documented in the Federal Highway Administration's (FHWA) Safe Transportation for Every Pedestrian (STEP) program and may be an effective strategy for parts of San Mateo County.



**Figure 23: Lighting in Pedestrian Collisions**
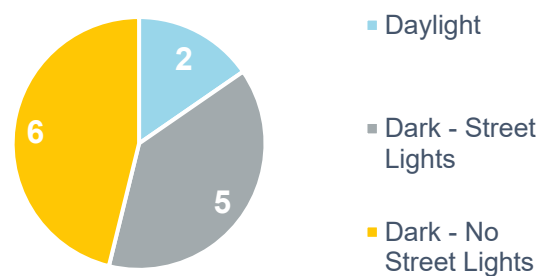


**Figure 24: Lighting in Fatal and Severe Pedestrian Collisions**

## Pedestrian Collisions in Urbanized Areas

Urbanized areas in unincorporated San Mateo County include, among others, North Fair Oaks and Broadmoor, with North Fair Oaks being the largest. **Figure 25** presents the bicycle and pedestrian collisions that occurred in North Fair Oaks versus in the rest of unincorporated San Mato County. About 18 percent of bicycle collisions in unincorporated areas of San Mateo County occurred in North Fair Oaks, roughly proportional to its share of the unincorporated County's population. While the North Fair Oaks community makes up a relatively small area of the larger unincorporated San Mateo County, half the pedestrian collisions occur there.
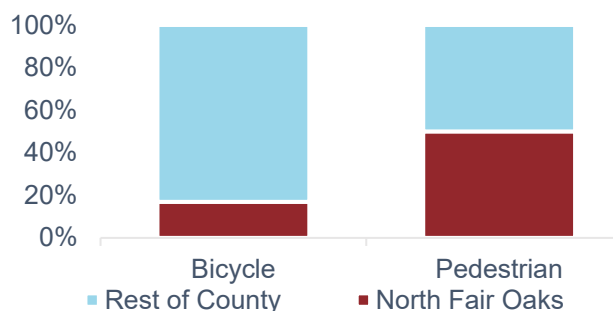


**Figure 25: Collisions in North Fair Oaks and Other Unincorporated Areas**

## Bicycle Collisions

### Crash Severity

Over the five-year period, there were 183 bicycle collisions, resulting in 179 injuries and four deaths (**Figure 25**). Overall, while fatalities are rare, bicycle collisions were likely to be more severe than pedestrian collisions: 73% of bicycle collisions resulted in visible injury or death, compared to 54% of pedestrian collisions. As with pedestrian collisions, it should be noted that the TIMS database only includes collisions where an injury was recorded, so there are likely more non-injury bicycle collisions that occurred and were not reported, as well as near misses.
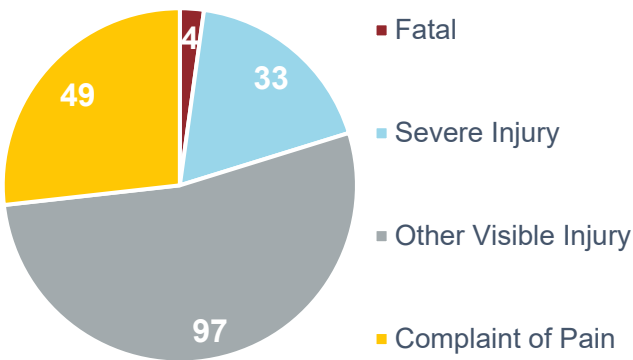


**Figure 26: Bicycle Crash Severity**

### Primary Collision Factors

**Table 3** indicates the most common primary collision factors for bicycle collisions in unincorporated San Mateo County. The most common bicycle collision factors were "improper turning" and "unsafe speed", accounting for over 60 percent of bicycle collisions. Other common violations include violations of the automobile right of way and riding on the wrong side of the road. Over 35% of bicycle collisions were caused by "improper turning", such as a "right hook" when a driver turns right without checking and/or yielding to bicyclists in the bike lane. An additional 29% of bicycle collisions were caused by unsafe speeds, and another 12.5% were caused by "automobile right of way", referring to when a bicyclist is in the path of an oncoming vehicle because they have not yielded correctly.

**Table 3: Primary Bicycle Collision Factors**

| Primary Collision Factor | Number |
|---|---|
| Improper Turning | 65 |
| Unsafe Speed | 53 |
| Automobile Right of Way | 23 |
| Wrong Side of the Road | 13 |
| Improper Passing | 8 |
| *Source: TIMS, 2013-2017* | |

### Bicycle and Motor Vehicle Collisions

Of the 182 collisions analyzed, 101 (55.5%) involved a motor vehicle. While all four fatal collisions involved a motor vehicle, severe injuries are common for bicycle-only collisions, such as those occurring on weekends, when the high speed of recreational rides on San Mateo County's hilly roads may contribute to the severity of injuries. **Figure 26** presents the severity of bicycle collisions that do and do not involve motor vehicles.
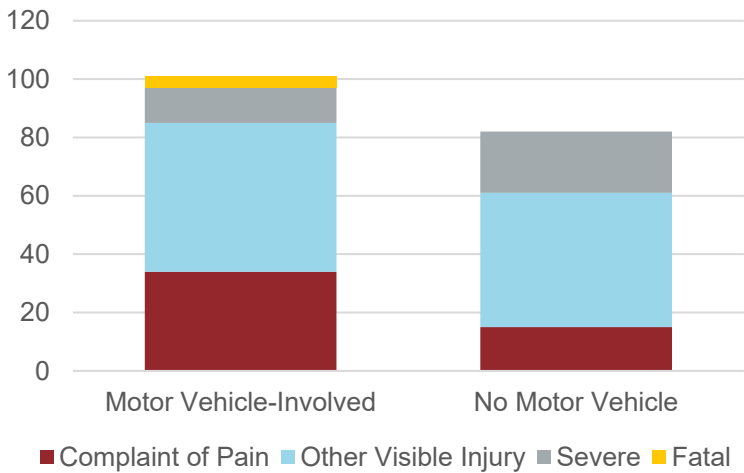


**Figure 27: Motor Vehicle Involvement in Bicycle Collisions**

## Considerations for the Active Transportation Plan

Key takeaways from the collision analysis include a need for the following strategies:

- **Prioritize investments for high-collision locations**: People are already walking and riding at these locations, and investments could improve safety. These streets will be included in the recommended improvements and could be prioritized for implementation.
- **Use collision factors for pedestrian infrastructure and education programs or campaigns:** Each of the high-frequency collision factors points to a need for both infrastructure and education. Suitable infrastructure can help make the movements of bicyclists, pedestrians, and drivers more predictable. Education can help all parties understand rules and responsibilities, safe ways to share the public right-of-way, and proper use of infrastructure to help avoid collisions.
- **Leverage existing Vision Zero policies and programs:** Vision Zero is a policy that aims to eliminate all traffic fatalities and severe injuries. It treats collisions as preventable occurrences and identifies strategies that reduce both the likelihood and severity of collisions. Many communities within the Bay Area have adopted Vision Zero policies and are developing action plans, and this could be a policy recommendation of this planning effort. These policies set communities on a path toward safer roadways for all users and may be a beneficial framework for reducing fatal and severe bicycle and pedestrian collisions.
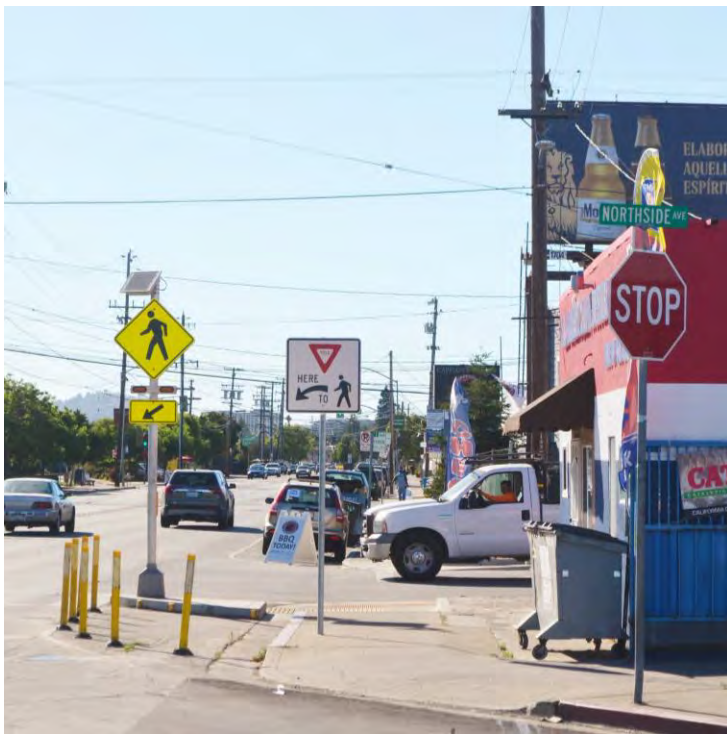


**Figure 28: Simulating curb extensions at a crosswalk with safe-hit posts and enhancing the crossing with an RRFB are enhancements that a vision zero program might recommend**

## Considerations for the Active Transportation Plan

The following items are considerations for developing the Active Transportation Plan drawn from the findings and recommendations from the studies reviewed.

- Active transportation is a key strategy to help several other planning efforts achieve goals in numerous areas including health, sustainability, and safety.
- Recommendations that mitigate challenging crossings of State Route 1 have been identified in numerous planning studies. An important outcome of this Plan should be to support the implementation of these recommendations.
- Key side street routes that provide alternatives to State Route 1 should be identified and studied for possible improvements to the walking and bicycling environment.
- Coordinating with Caltrans is needed to solve many issues for walking and bicycling along and across state highways in unincorporated parts of San Mateo County. Three state highways of note are State Route 1 on the Coastside, important locations for pedestrians and bicyclists along State Route 92 within the Coastside and other parts of the County, and State Route 82 in North Fair Oaks.
- Pedestrian and bicycle facilities' design is governed by national and statewide standards, but also certain local policies like the Local Coastal Program.
- This Plan should consider a variety of destination types in its recommendations. Many issues identified in the Coastside and State Route 1 studies relate to people accessing beaches, parks, and trails.
- While there are other planning efforts like the Trails Master Plan that identify new trails, the Active Transportation Plan should include recommendations that make these trails work better with improved crossings and on-street access to trails. Connections should be made with the Regional Trail Network – both North to South and East to West
- This plan should identify important connections with adjacent communities to support the development and prioritization of recommendations within unincorporated areas and support continuity between jurisdictions.
- The plan should help to connect urban areas on the east side of the county to open space on the west side, which would also foster connections between low-income communities and open space amenities.
- The plan should develop policy and infrastructure recommendations to address "last mile" connections with transit

# Opportunities

This review of Existing Conditions demonstrates the progress that San Mateo County has made in developing its active transportation networks as well as the support for active transportation in other planning documents. San Mateo County's pedestrian and bicycle infrastructure and programs can be further strengthened through these opportunities:

- Increasing connectivity between existing pedestrian and bicycle facilities
- Upgrading high-stress facilities and/or identifying lower-stress routes
- Focusing on addressing the historical causes of bicycle and pedestrian collisions
- Recommending policies – such as lighting, enhanced crossing treatments, and red curb areas for visibility – that depend on land use context to provide relevant recommendations for a large geographic area
- Highlighting key focus areas with high volumes or projected volumes of people walking and bicycling to ensure that the Plan makes recommendations where they are most needed
- Increasing access to transit
- Enhanced active transportation encouragement and education programming

Subsequent phases of the Unincorporated San Mateo County Active Transportation Plan will provide infrastructure and programmatic recommendations to address these opportunities.

San Bruno
Mtn Park

South San
Francisco

San Bruno

Pacifica

Millbrae

Burlingame

McNee Ranch
State Park

Montara

San Mateo

El Granada

San Mateo
Highlands

Old County Rd

San Francisco
Bay National
Wildlife
Refuge

North Fair
Oaks

East Palo
Alto

Half Moon
Bay

Emerald
Lake Hills

Atherton

Purisima Creek Rd

Huddart
Park

Stanford
Lands

Verde Rd

El Corte de
Madera Open
Space

Wunderlich
County Park

Sky Londa

Windy Hill
Open Space

Coal Creek
Open Space

Skyline
Ridge Open
Space

La Honda

Sam McDonald
Park

Long Ridge
Open Space

Loma Mar

Pescadero
Creek

Portola
State Park

Stage Rd

Pescadero

Bean Hollow
Lakes Park

Butano State
Park

State Highway 1

## Legend

### Existing Bikeways

— Trail or Path

— Separated Bicycle Lane

— Bicycle Lane

— Bicycle Route

### Other

Parks

Schools

Incorporated Cities

Unincorporated Areas

County Boundary

N

0  1  2  3 mi

**Legend**

**Existing Bikeways**
- Trail or Path
- Separated Bicycle Lane
- Bicycle Lane
- Bicycle Route

**Other**
- Parks
- Schools
- Incorporated Cities
- Unincorporated Areas
- County Boundary

0  1  2  3 mi

**Existing Bikeways**

- Trail or Path
- Separated Bicycle Lane
- Bicycle Lane
- Bicycle Route

**Other**

- Parks
- Schools
- Incorporated Cities
- Unincorporated Areas
- County Boundary

## Legend

### Existing Bikeways
- Trail or Path
- Separated Bicycle Lane
- Bicycle Lane
- Bicycle Route

### Other
- Parks
- Schools
- Incorporated Cities
- Unincorporated Areas
- County Boundary

Frontierland Park

San Pedro Valley

McNee Ranch State Park

State Highway 1

3rd St

6th St

Main St

Cedar St

Harte St

Montara

Sunshine Valley Rd

Sierra St

Carlos St

Cypress Ave

Etheldore St

Moss Beach

Fitzgerald Marine Reserve

Airport St

Pillar Point Bluff

State Highway 1

Capistrano Rd

Avenue Alhambra

The Alameda

El Granada

Obispo Rd

Princeton

Miramar

N

0    0.25    0.5 mi

**Existing Bikeways**
- Trail or Path
- Separated Bicycle Lane
- Bicycle Lane
- Bicycle Route

**Other**
- Parks
- Schools
- Incorporated Cities
- Unincorporated Areas
- County Boundary

## Existing Bikeways

— Trail or Path
— Separated Bicycle Lane
— Bicycle Lane
— Bicycle Route

## Other

Parks
Schools
Incorporated Cities
Unincorporated Areas
County Boundary

Veterans Blvd

US Highway 101

State Highway 84

E Bayshore Rd

Broadway

**Mobile Home Parks**

State Highway 84  State Highway 84

Hoover School Park

Middlefield Rd

Bay Rd

Bay Rd

Hurlingame Ave

Fair Oaks Ave

5th Ave

Florence St

14th Ave

Edison Way

Middlefield Rd

2nd Ave

5th Ave

**North Fair Oaks**

Fair Oaks Ave

Marsh Rd

US Highway 101  US Highway 101

Flood Park

**Belle Haven Elementary School**

82

84

Marlborough Ave

William Ave

Bay Rd

Laurel Elementary School

Menlo Oaks Dr

**Menlo Oaks**

101

Selby Ln

5th Ave

82  State Highway 82

Watkins Ave

Middlefield Rd

Encinal Ave

Coleman Ave

Ringwood Ave

**Willow Oaks Elementary School**

State Highway 114

Laurel St

Middlefield Rd

**Sequoia Tract**

**Atherton**

Menlo College

82

82

Laurel St

Alma St

Laurel St

Saint Josephs Elementary School

Santa Cruz Ave

Santa Cruz Ave

Nealon Park

University Dr

San Mateo Dr

Valparaiso Ave

**West Menlo Park**

Alameda De Las Pulgas

Alameda De Las Pulgas

Hillview Middle School

Oakdell Dr

Altschul Ave

Avy Ave

Santa Cruz Ave

La Entrada Middle School

Alpine Rd

Sharon Park

Sand Hill Rd
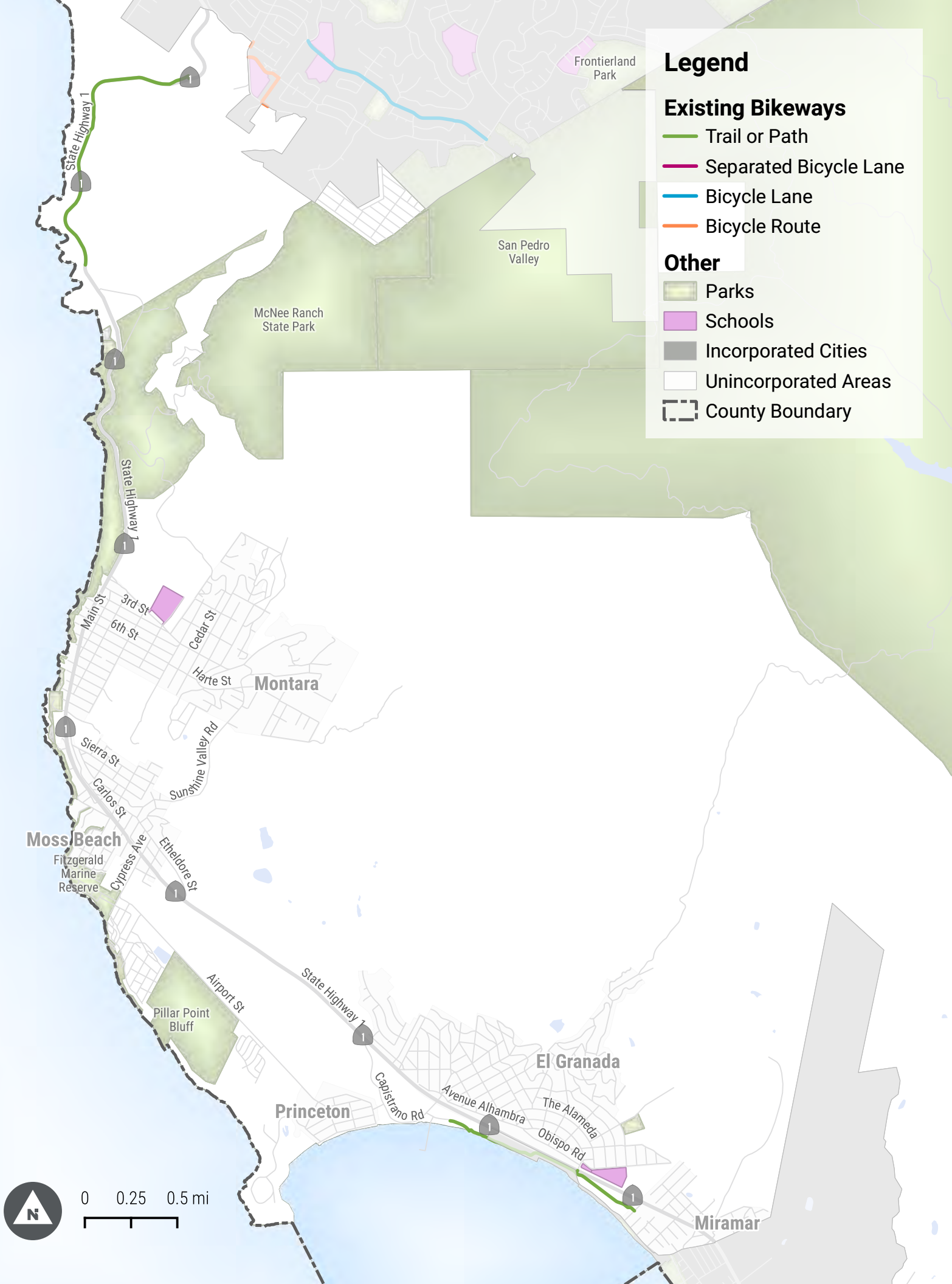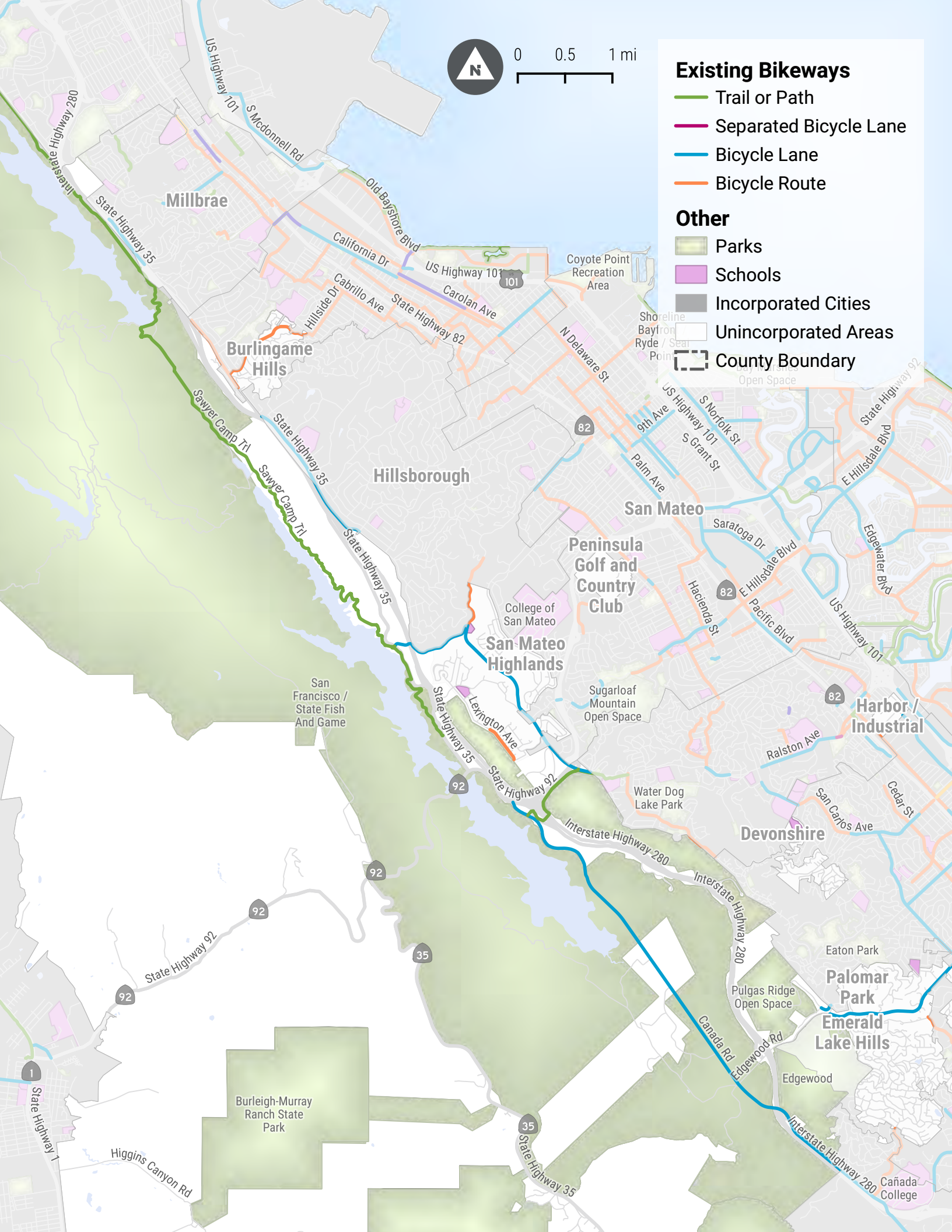
**Stanford Lands**

280

## Legend

### Existing Bikeways

— Trail or Path

— Separated Bicycle Lane

— Bicycle Lane

— Bicycle Route

### Other

▦ Parks

▦ Schools

▦ Incorporated Cities

☐ Unincorporated Areas

⬚ County Boundary

N

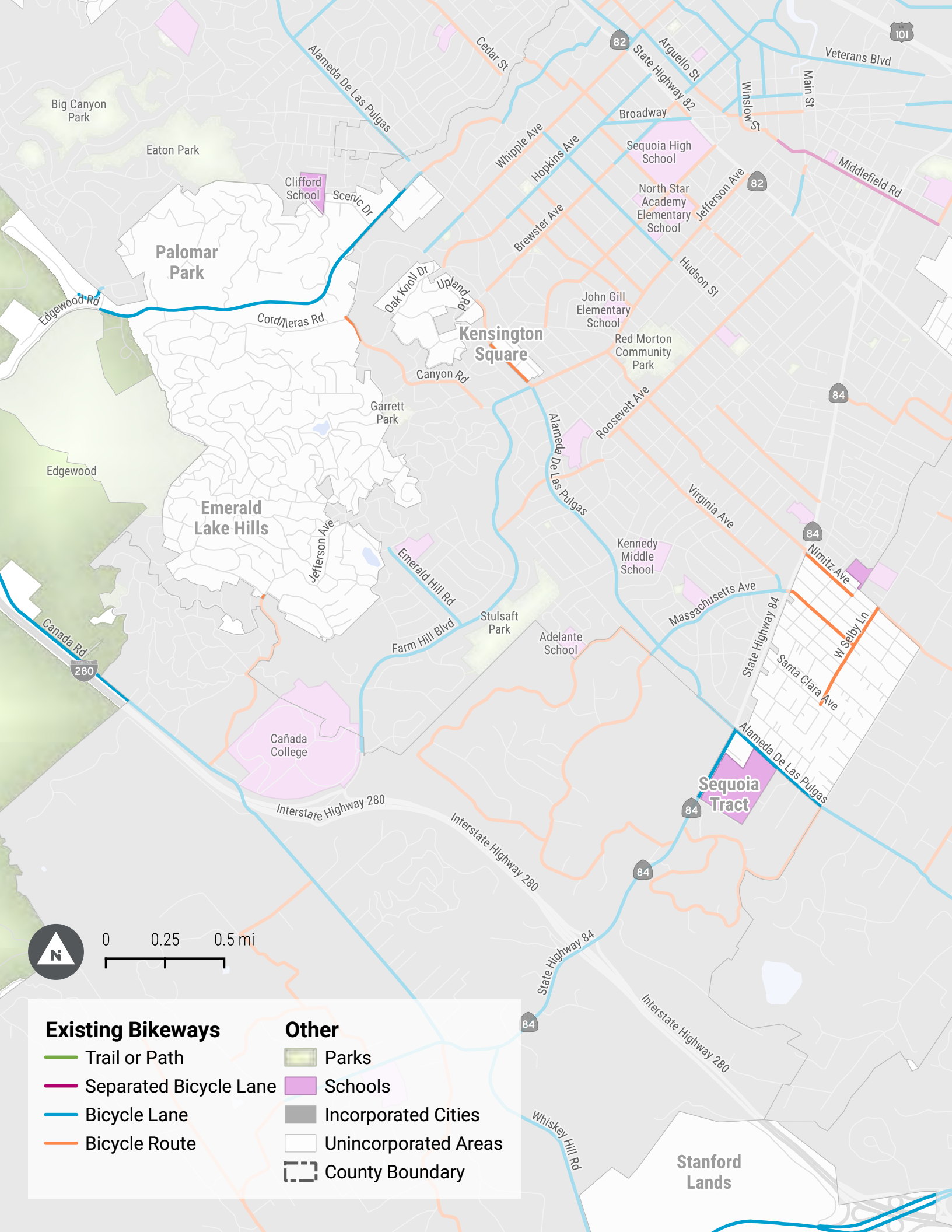0    0.25    0.5 mi

**Legend**

**Existing Bikeways**
- Trail or Path
- Separated Bicycle Lane
- Bicycle Lane
- Bicycle Route

**Other**
- Parks
- Schools
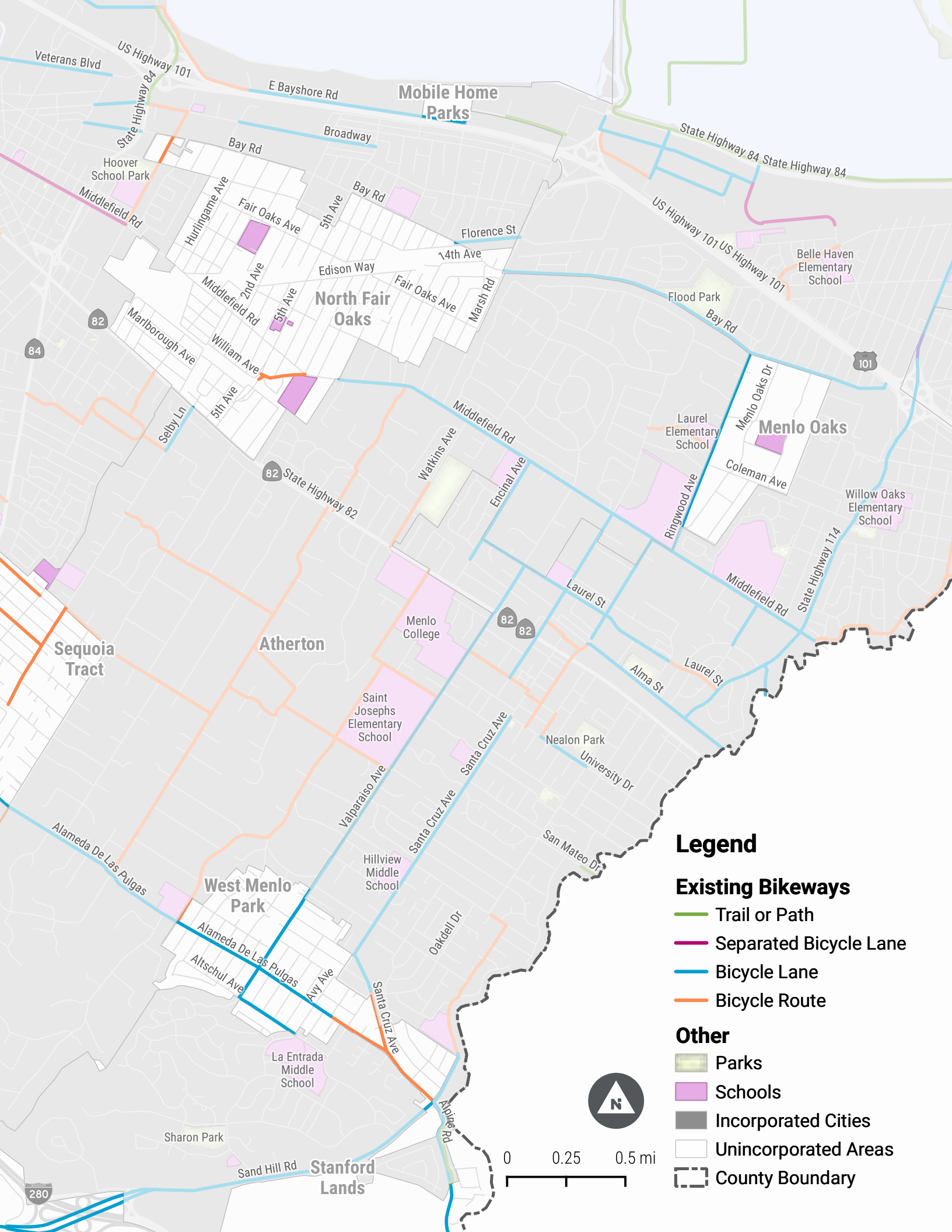- Incorporated Cities
- Unincorporated Areas
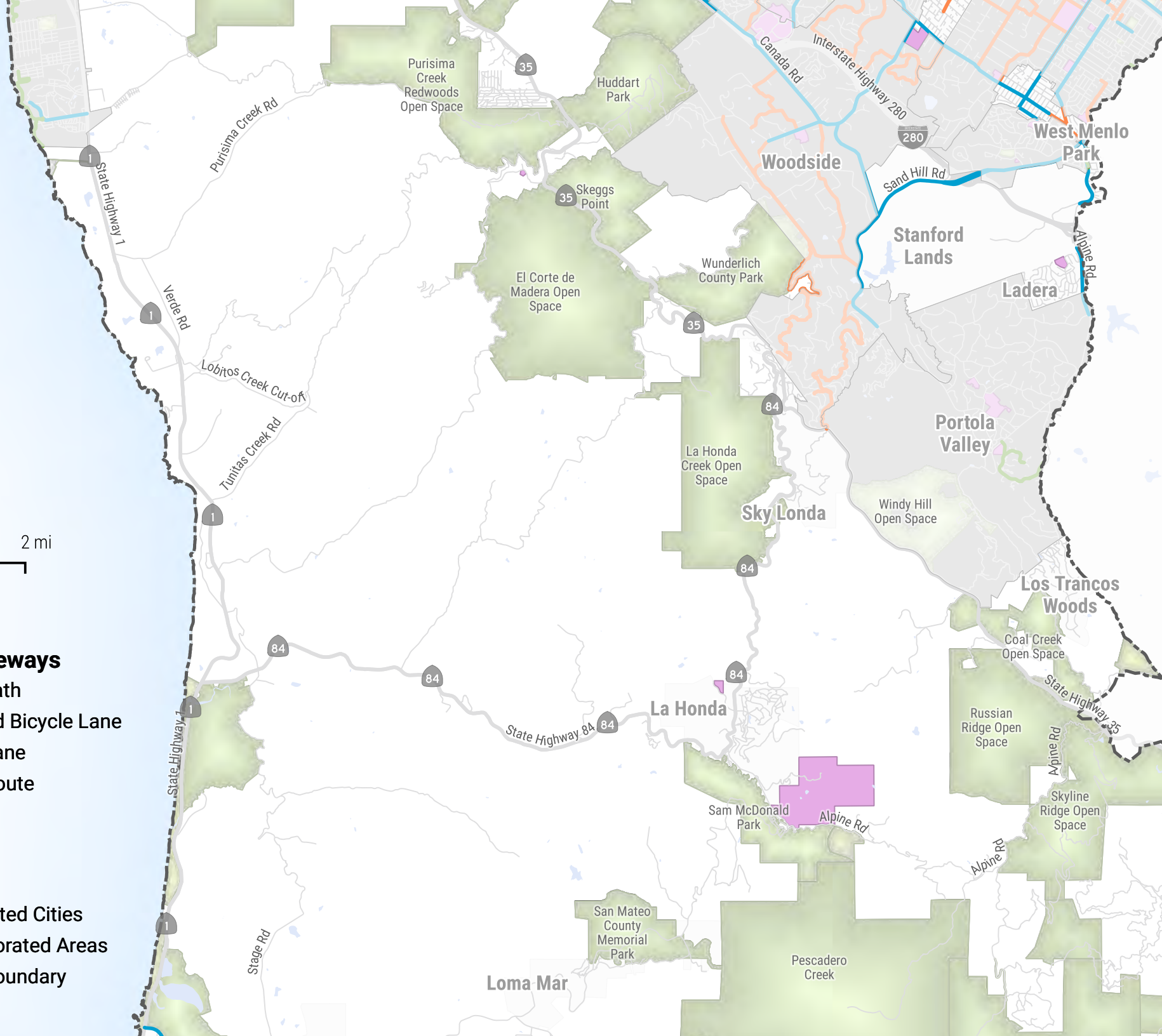- County Boundary

0   0.5   1   1.5   2 mi

West Menlo Park

Woodside

Stanford Lands

Ladera

Purisima Creek Redwoods Open Space

Huddart Park

Skeggs Point

Wunderlich County Park

El Corte de Madera Open Space

Portola Valley

La Honda Creek Open Space

Sky Londa

Windy Hill Open Space

Los Trancos Woods

Coal Creek Open Space

La Honda

Russian Ridge Open Space

Sam McDonald Park

Skyline Ridge Open Space

San Mateo County Memorial Park

Pescadero Creek

Loma Mar

State Highway 1

Verde Rd

Purisima Creek Rd

Lobitos Creek Cut-off

Tunitas Creek Rd

Stage Rd

State Highway 84

Alpine Rd

Sand Hill Rd

Canada Rd

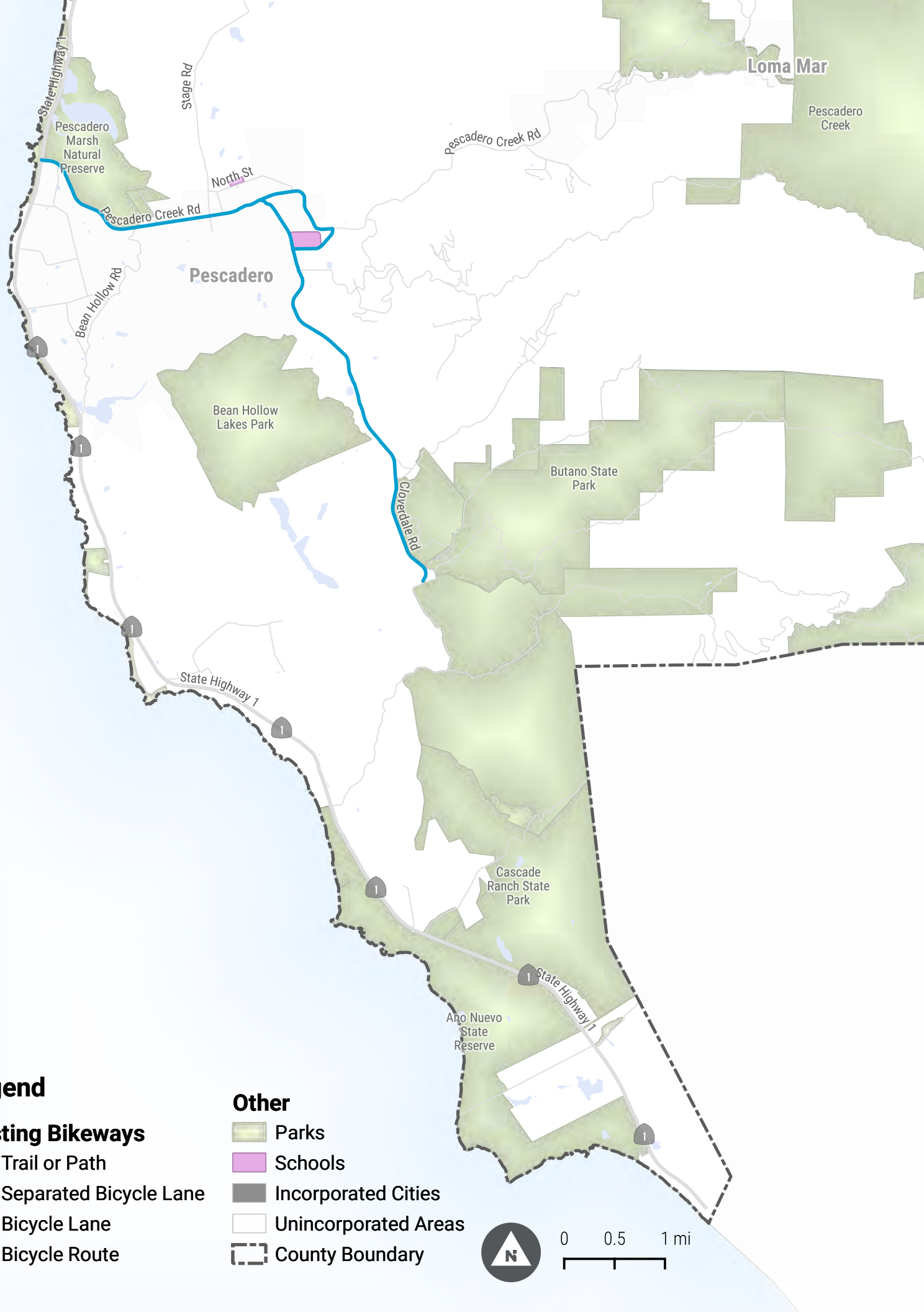Interstate Highway 280

State Highway 35

## Legend

### Existing Bikeways

— Trail or Path
— Separated Bicycle Lane
— Bicycle Lane
— Bicycle Route

### Other

Parks
Schools
Incorporated Cities
Unincorporated Areas
County Boundary

Loma Mar

Pescadero Creek

Pescadero Marsh Natural Preserve

Stage Rd

North St

Pescadero Creek Rd

Pescadero

Bean Hollow Rd

Bean Hollow Lakes Park

Cloverdale Rd

Butano State Park

State Highway 1

Cascade Ranch State Park

Ano Nuevo State Reserve

State Highway 1

N

0    0.5    1 mi

# MEMORANDUM

August 13, 2019

To: Julia Malmo-Laycock
Organization: San Mateo County Office of Sustainability
From: Lucas Woodward and Laura Krull, Toole Design Group
Project: Unincorporated San Mateo County Active Transportation Plan

**Re: Potential Demand Analysis Memorandum**

As a part of the Unincorporated San Mateo Active Transportation Plan development, Toole Design conducted a demand analysis to identify areas in unincorporated San Mateo County with potential for bicycle and pedestrian activity. Potential Demand Analysis is used to determine where there is a high potential for people to walk and bike. This memo presents the findings from this analysis and is intended as an internal-facing product that supports subsequent recommendations development and prioritization tasks in the Plan.

This analysis focuses on walking and bicycling for utilitarian trips, understanding that recreational walking and bicycling is very popular in San Mateo County.

## METHODOLOGY

This analysis draws upon best practices from academic research to estimate areas with a high potential number of walking and bicycling trips. The goal of the Potential Demand Analysis is to identify patterns and areas with high potential for bicycle and pedestrian demand based on development patterns and demographic factors. However, the analysis is not meant to be predictive of actual bicycle activity.

The geographic scale of analysis is at the census block level; these geographies have the richest population and employment data gathered in the U.S. Census. The demand analysis is a sum of four factors:

- Population density
- Employment density
- Land use mix
- Intersection density

### DEMAND ANALYSIS FACTORS

Researchers have shown how the built environment influences travel demand along three dimensions; density, diversity, and design. Specifically, density, land-use diversity and pedestrian-oriented design reduces trip rates and encourages non-auto travel.[1] Given that bicycle and pedestrian trips are generally short and thus bicycle and pedestrian activity is context specific, there is not one industry standard for which variables to include when

[1] Cervero, R., & Kockelman, K. (1997). Travel demand and the 3 ds: density, diversity, and design. Transportation Research Part D: Transport and Environment 2(3). 199-219. https://doi.org/10.1016/S1361-9209(97)00009-6

estimating demand. Therefore, the analysis uses broader variables that have been statistically significant in many demand models. While it will not be possible to calibrate the model to the County's existing count data, we will provide a qualitative assessment of how patterns may differ between locations with existing count data and the overall demand model.

## Population Density

Population density is a major determinant for both recreational and utilitarian trips. The more people are in an area, the higher the probability people are walking or biking, both due to the proximity of origins and destinations and to the raw additional number of people located within it.[2]

Calculation: population in census block / area of census block

## Employment Density

Employment density is also a major determinant for utilitarian trips, since it serves as a bicycle or walking trip generator and attractor. Job data is provided by the 2015 Origin-Destination Employment Statistics (LODES) dataset from the Longitudinal Employer-Household Dynamics (LEHD). While employment has increased since 2015, this is the most recent comprehensive data available for employment density.

Calculation: Jobs in census block group / area of census block group

## Land use mix

Land use diversity is also associated with pedestrian and bicycle activity. Having more land uses co-located can reduce the distance between destination, reducing vehicle miles traveled and correlating positively with active transportation usage[3]. Non-motorized mode choices and the likelihood to choose a walking trip is most strongly associated with local land use patterns[4][5]. Transit oriented development (TOD) is an example of high land use diversity, where transit, housing, and retail are co-located.

Calculation:  Total number of different land uses within the census block. Land uses from County data were consolidated into seven different categories. For example, different scales of residential development such as single-family residential and multi-unit residential would all fall under the residential category.

## Intersection Density

Research into travel mode choice has shown that intersection density is highly correlated with increased active transportation trips. [6] Areas with a high number of intersections with three or more legs tend to have better connectivity and high densities and diversities of utilitarian destinations and are therefore locations in which walking and bicycling are more likely to occur.

Calculation: Total number of intersections with 3 or more legs within the census block / total area of the census block.

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[2] Nielsen, Thomas & Skov-Petersen, Hans. (2018). Bikeability – Urban structures supporting cycling. Effects of local, urban and regional scale urban form factors on cycling from home and workplace locations in Denmark. Journal of Transport Geography. 69. 36-44. 10.1016/j.jtrangeo.2018.04.015.

[3] Boer, R., Zheng, Y., Overton, A., Ridgeway, G., & Cohen, D. (2007). Neighborhood design and walking trips in ten U.S. metropolitan regions. American Journal of Preventive Medicine, 32(4), 298-304.

[4] Ewing, R., & Cervero, R. (2001). Travel and the built environment: A synthesis. Transportation Research Record: Journal of the Transportation Research Board, 1780, 87-114.

[5] Ewing, R., & Cervero, R. (2010). Travel and the built environment: A meta-analysis. Journal of the American Planning Association, 76(3), 265-294.

[6] Winters, M., Brauer, M., Setton, E., Teschke, K. (2010) Built Environment Influences on Healthy Transportation Choices: Bicycling Versus Driving. Journal of Urban Health, 2010.

## CALCULATION

The total demand score is a summation of population density, employment density, land use mix and intersection density. Each factor is calculated separately and then the factors are weighed equally to create a composite score, as shown in Table 1 below.
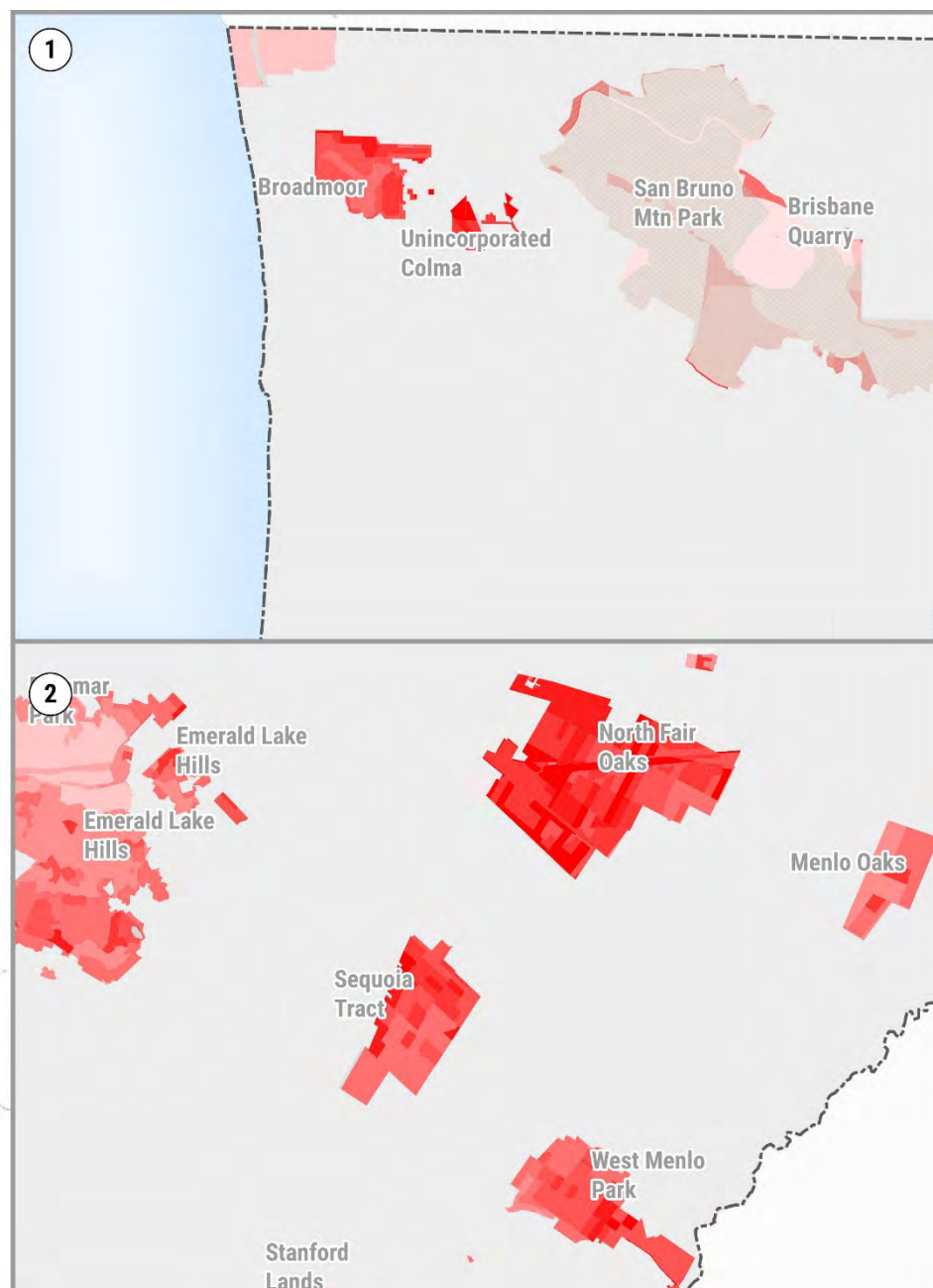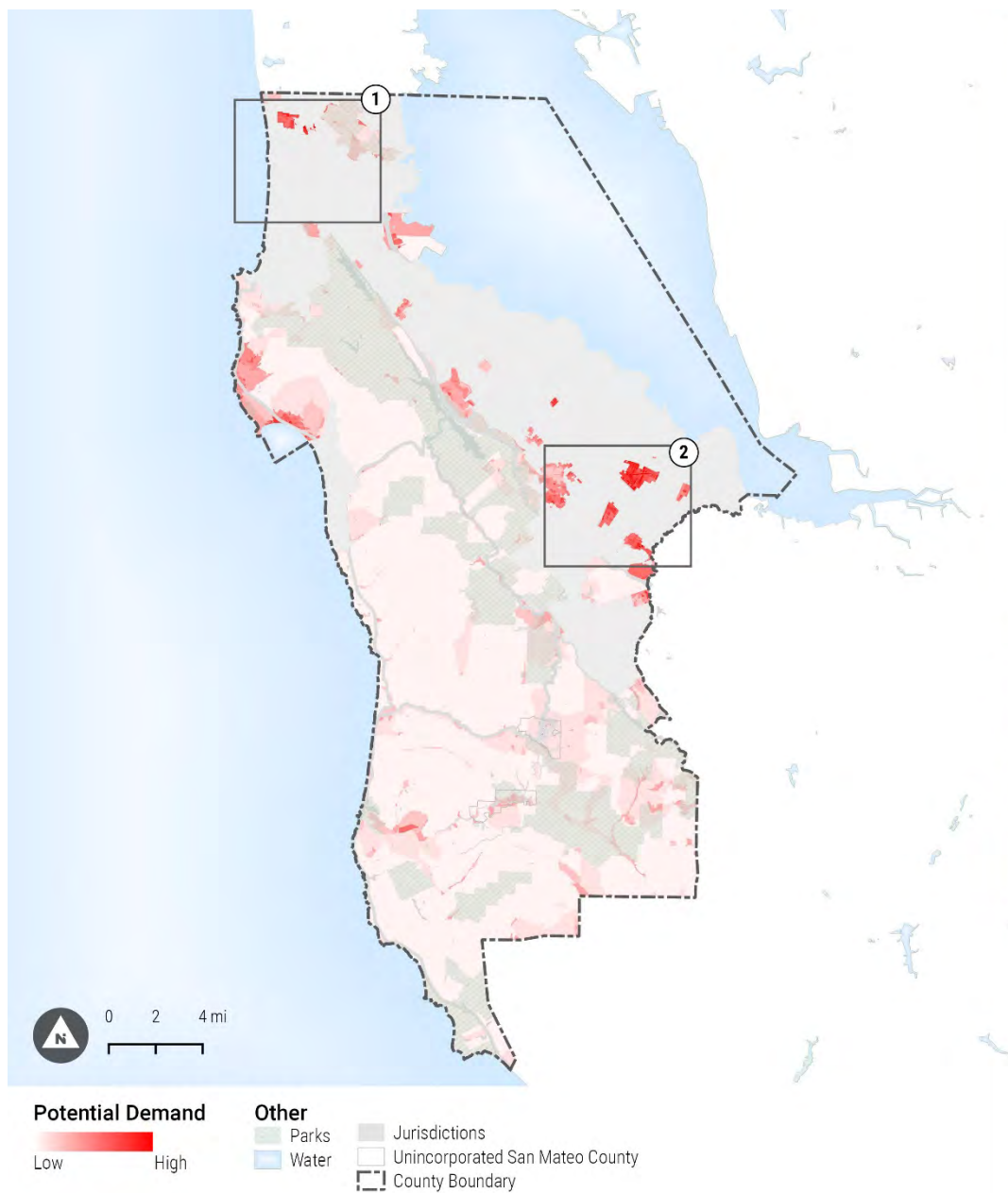
**Table 1, Potential Demand Factors**

| Factor | Calculation | Data Source | Weight |
|---|---|---|---|
| Intersection Density | # intersections with > 3 legs | Street network | 25% |
| Population Density | Total population / census block area | 2016 ACS 5-year estimates | 25% |
| Job Density | Total employment/census block area | 2014 Origin-Destination Employment Statistics (LODES), from the Longitudinal Employer-Household Dynamics (LEHD) | 25% |
| Land Use Mix Density | Total land use types within ¼ mile/census block area | County land use data | 25% |
| **Total** | | | 100% |

# RESULTS

Figures 1-4 highlight the six unincorporated areas with the highest potential demand for bicycling and walking. These include:

> » North Fair Oaks
>
> » Unincorporated Colma/Broadmoor
>
> » Sequoia Tract
>
> » Emerald Lake Hills
>
> » West Menlo Park
>
> » Coastside communities, stretching from Montara to El Granada.

**Figure 2** displays only census blocks above the 90th percentile in demand countywide. Most of these census blocks are located within North Fair Oaks, consistent with the community's high population density, mix of land uses, and relatively small blocks.

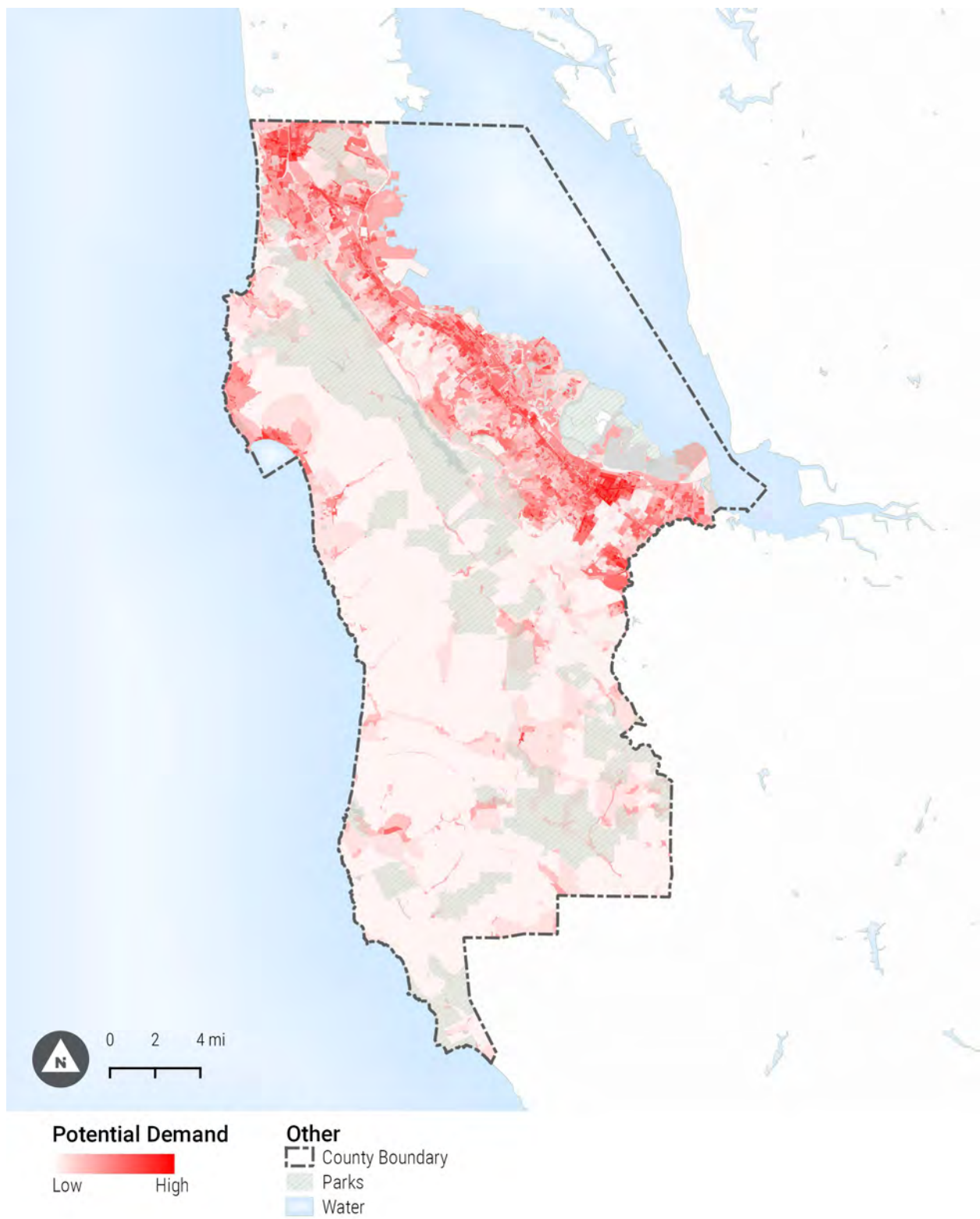**Figure 1: Potential Demand - Unincorporated San Mateo County**
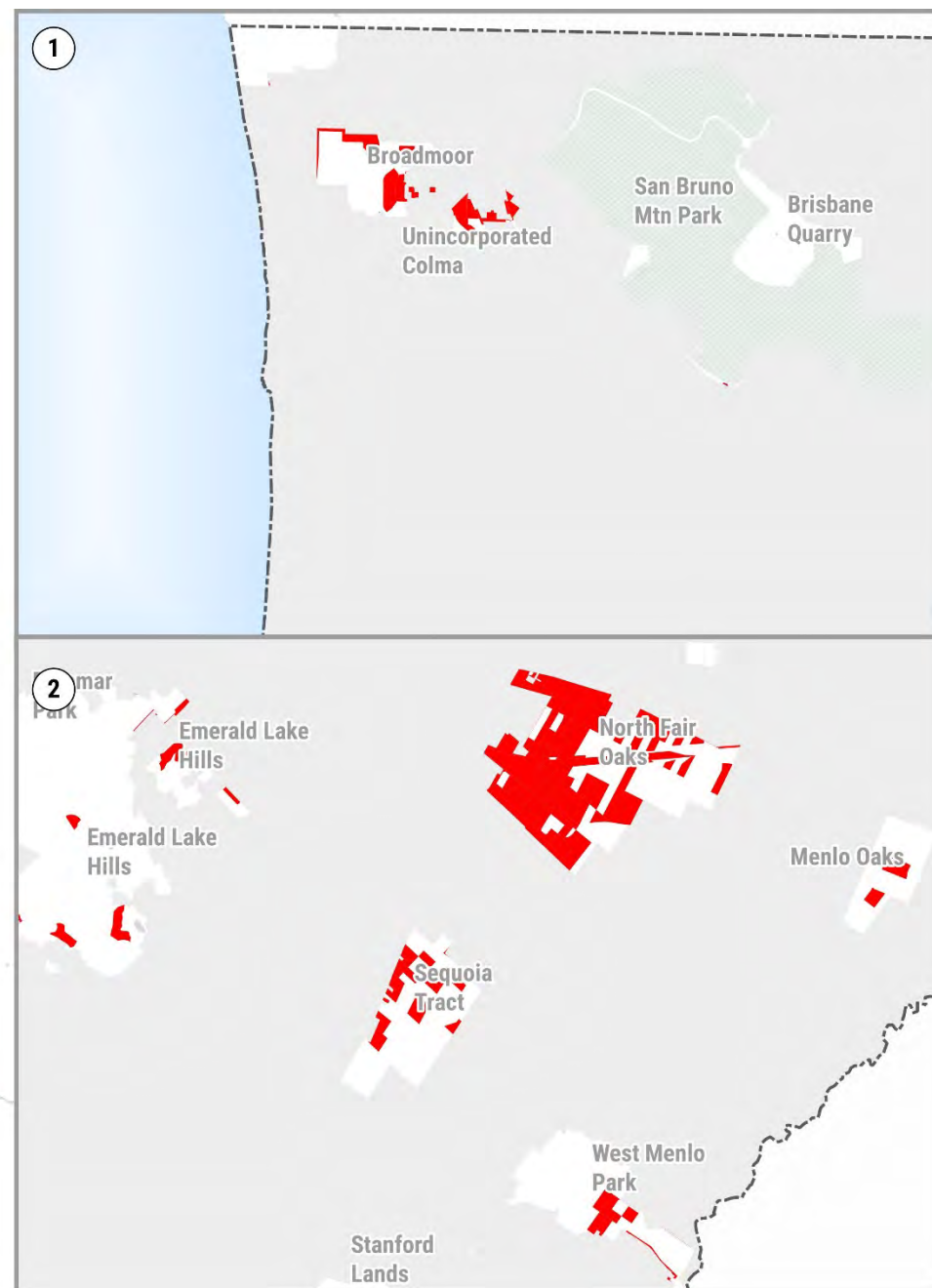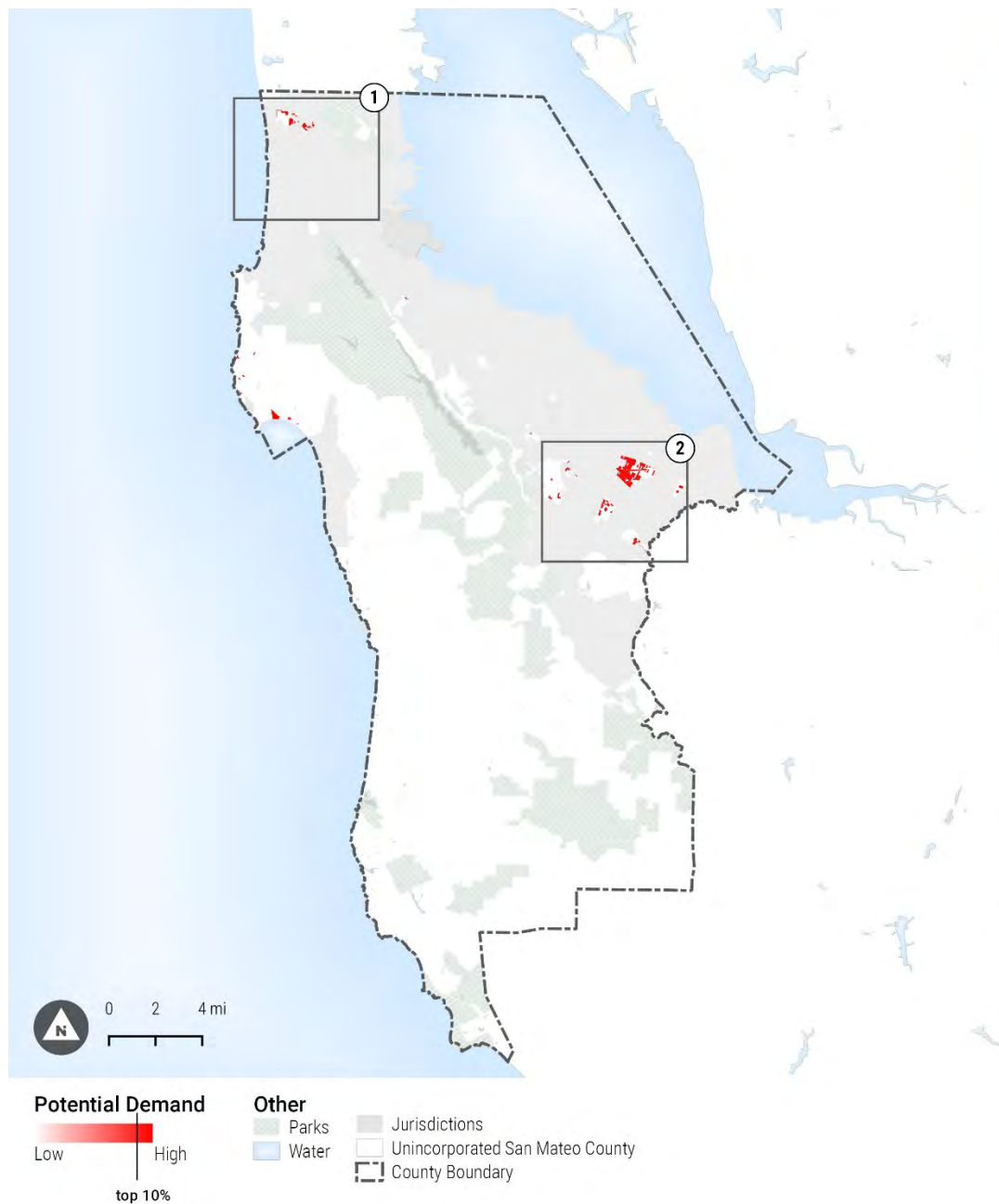
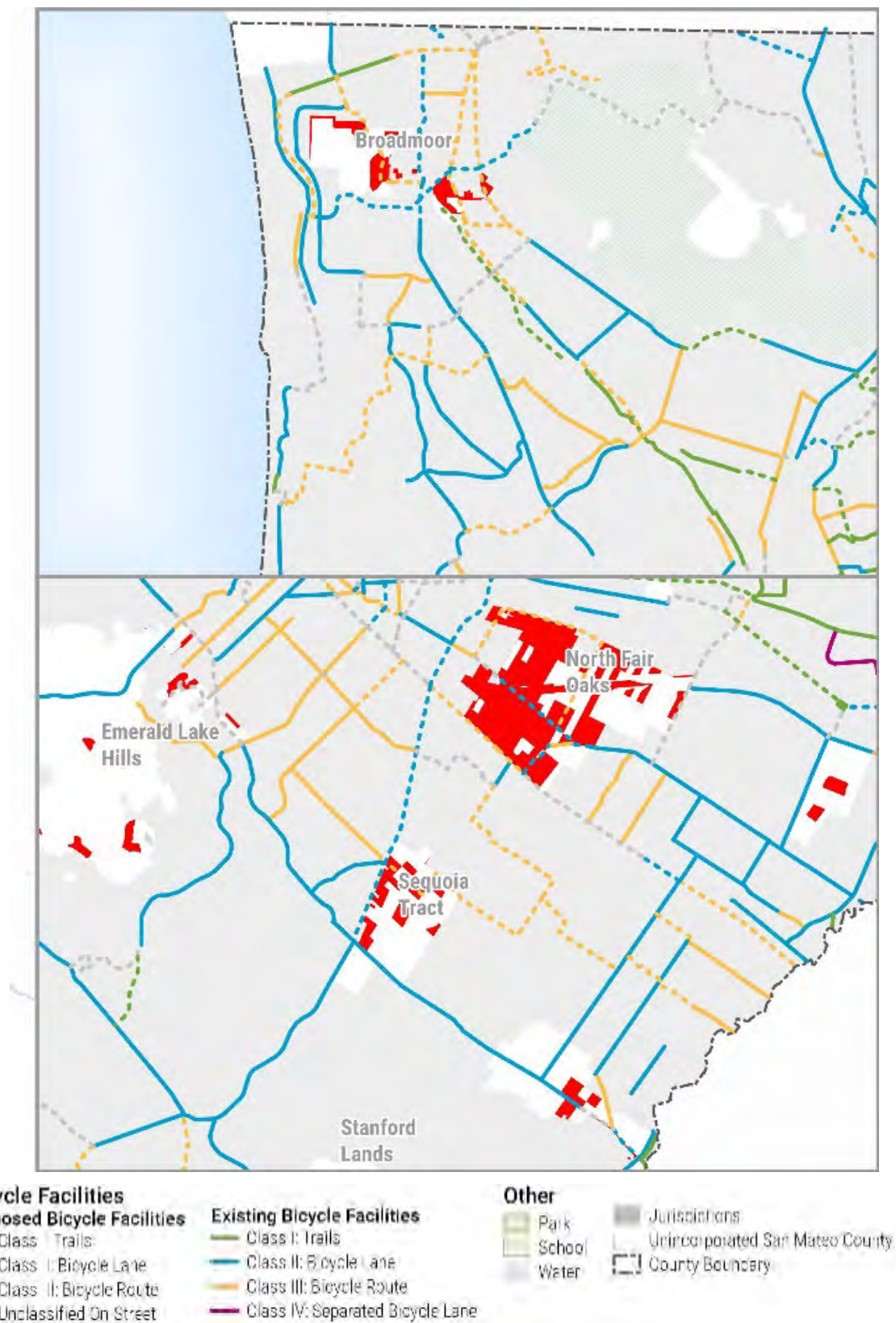**Figure 2: Potential Demand - Top 10%**

While this plan focuses on unincorporated areas within the county, demand is not static and demand from neighborhood jurisdictions can pass through unincorporated areas. **Figure 3** illustrates the varied demand throughout San Mateo County, with the high potential demand areas concentrated along the peninsula, with a pocket of high demand near Half Moon Bay.

**Figure 4** overlays some of the highest demand areas in San Mateo County with the existing and proposed bicycle network. The existing bicycle network is sparse within some of these areas. Improvements like the Middlefield Road Improvement Project will significantly improve connectivity in North Fair Oaks. Other high-demand areas in unincorporated San Mateo County include proposed bicycle facilities as per C/CAG's 2011 Comprehensive Bicycle and Pedestrian Plan. These proposed facilities would connect with existing bicycle facilities to improve accessibility between unincorporated communities and destinations in San Mateo County's cities and towns.

**Figure 3: Countywide Potential Demand**

**Bicycle Facilities**

**Proposed Bicycle Facilities**
- – – Class I Trails
- – – Class I Bicycle Lane
- – – Class II Bicycle Route
- – – Unclassified On Street

**Existing Bicycle Facilities**
- —— Class I: Trails
- —— Class II: Bicycle Lane
- —— Class III: Bicycle Route
- —— Class IV: Separated Bicycle Lane

**Other**
- Park
- School
- Water
- Jurisdictions
- Unincorporated San Mateo County
- County Boundary

**Figure 4: Potential Demand and Bicycle Network**

# COMPARISON WITH COUNT DATA

The demand analysis studies areas with high potential for walking and bicycling. These can be compared qualitatively with areas where the County has collected pedestrian and bicycle data.

Bicycle and Pedestrian Counts are shown in **Figure 5** and **Figure 6.** These maps show similar patterns, with higher volumes of pedestrian and bicycle activity generally found in incorporated cities and towns. Consistent with the demand analysis for unincorporated areas, high levels of pedestrian and bicycle activity were observed in North Fair Oaks and in the Coastside communities. There are also locations with high potential for walking and bicycling where counts were not performed between 2016-2018, like Broadmoor, unincorporated Colma, and Montara. These may be locations for future counting efforts.
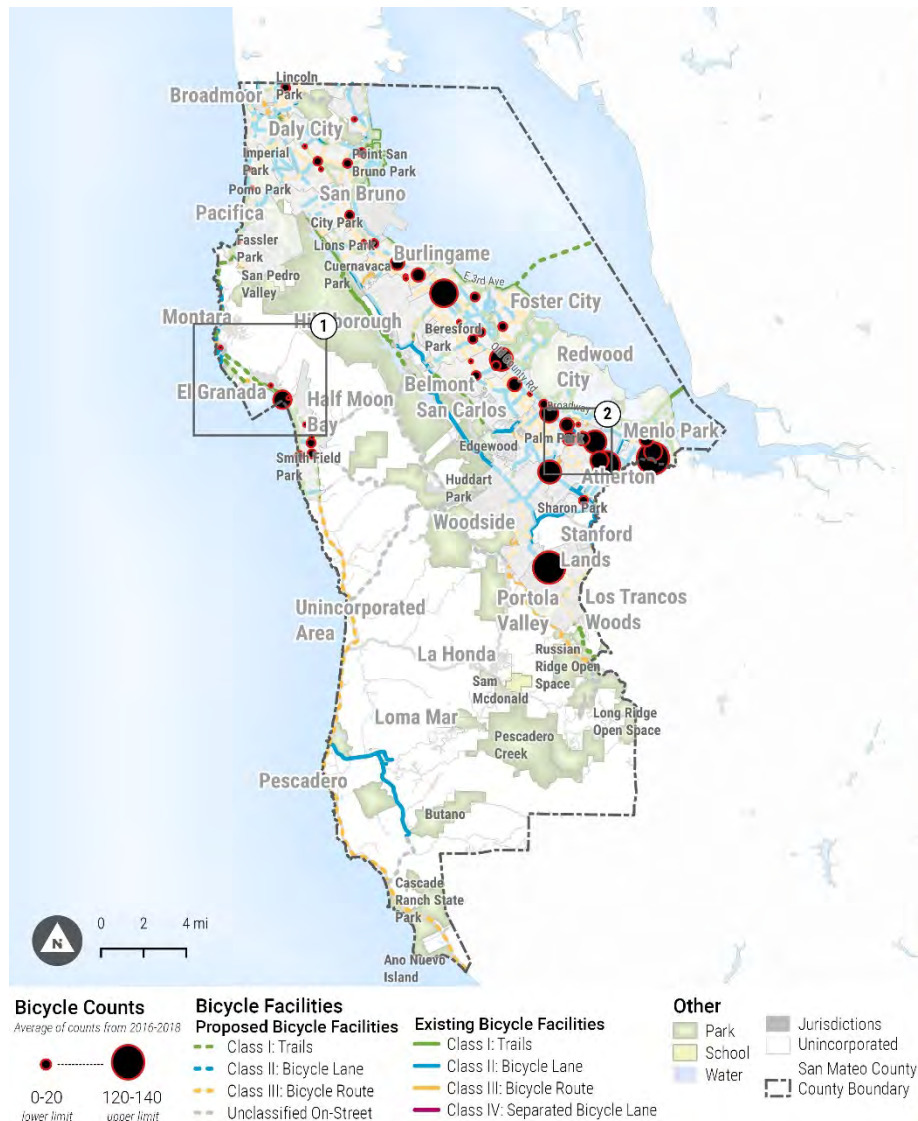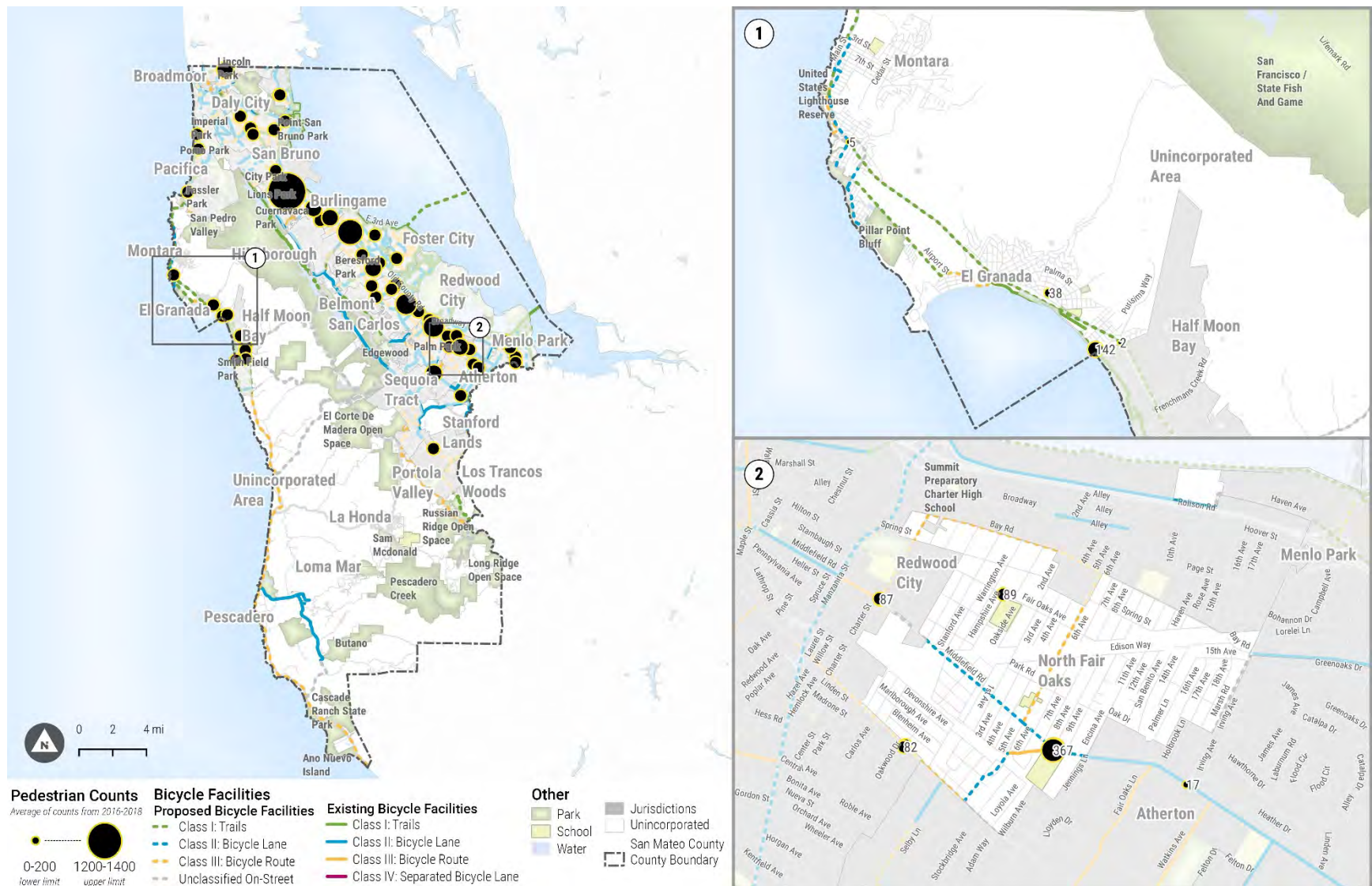
**Figure 5: Peak period bicycle counts[7] in San Mateo County (2016-2018)**

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[7] Manual bicycle counts were taken during AM Peak (7-9AM) or PM Peak (5-7PM) during weekdays and midday (12-2PM) on weekends between 2016-2018. Counts represent the total cyclists during that two hour window. If counts were done over multiple days during the time period, the total was averaged.
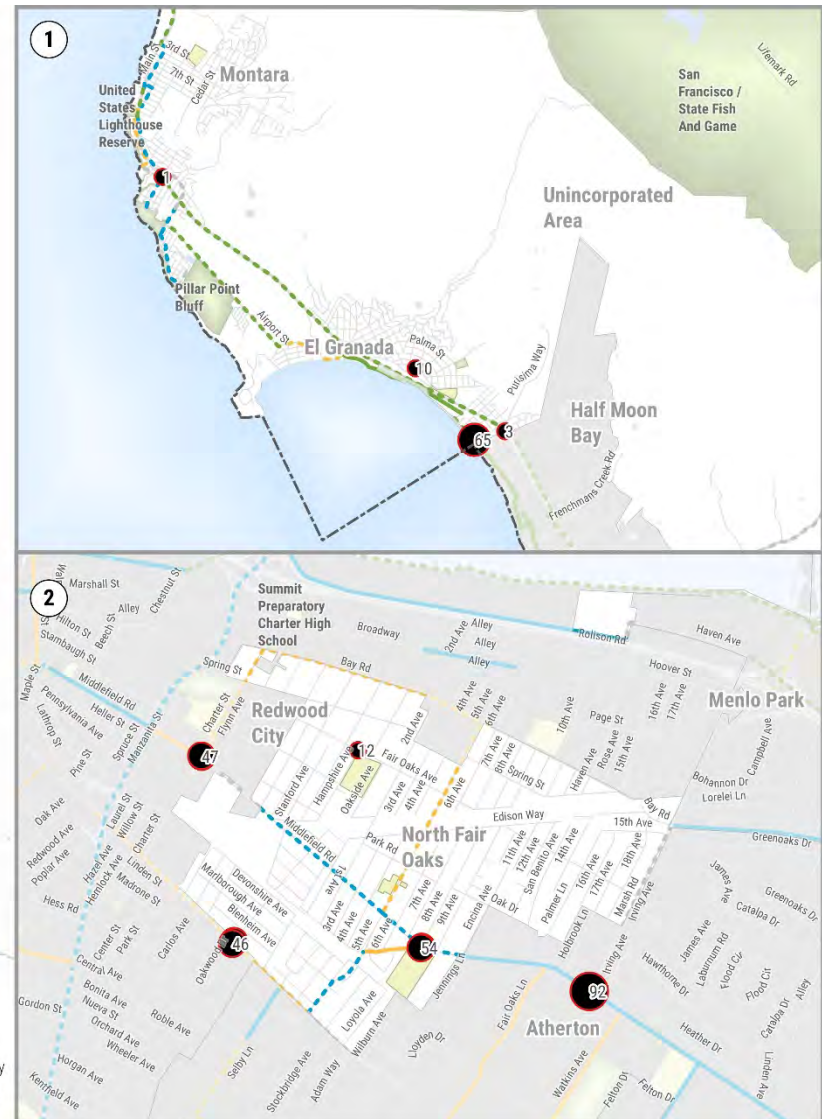
**Figure 6: Peak Period Pedestrian Counts[8] for San Mateo County**

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[8] Manual pedestrian counts were taken during AM Peak (7-9AM) or PM Peak (5-7PM) during weekdays and midday (12-2PM) on weekends between 2016-2018. Counts represent the total pedestrians during that two hour window.

# CONCLUSIONS

Potential demand in Unincorporated San Mateo County is concentrated in three areas: in the north near Broadmoor, further south along the coast, and in the bayside communities in the southern part of San Mateo County. Identifying the six communities that represent some of the highest areas of demand can help focus connections to and within these areas to further build out the bicycle and pedestrian networks.

In the recommendations task, we may recommend new pedestrian and bicycle facilities in high-demand areas that are not served well by existing infrastructure. Demand scores for census blocks in San Mateo County can be incorporated into the prioritization process, where bicycle and pedestrian facilities that serve higher-demand areas are prioritized. This information can also support projects in competitive funding applications.

**TOOLE**
**DESIGN**

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November 7, 2019

To: Julia Malmo-Laycock
Organization: County of San Mateo
From: Sara Rauwolf and Laura Krull, Toole Design
Project: Unincorporated San Mateo County Active Transportation Plan

**Re: Gap Analysis Memorandum**

This memo presents an overview of the pedestrian and bicycle network gaps in Unincorporated San Mateo County. The purpose of this memo is to identify areas in Unincorporated San Mateo County where pedestrian and bicycle facility types may be lacking or may not match the needs of the users and local environment. These gaps will be used to create the recommended study network in the next phase of the project.

The bicycle network gap analysis identifies:

1) Spot and segment gaps in the bicycle network
2) Existing high stress bicycle facilities
3) High demand areas that are not connected to the bicycle network
4) Gaps in bicycle access to key destinations, as identified by community members through the public engagement process and in conjunction with County staff

The pedestrian network gap analysis identifies:

1) Spot gaps in the pedestrian network
2) Gaps in pedestrian access to key destinations, as identified by community members through the public engagement process and in conjunction with County staff

The findings of the gap analysis will help inform network recommendations for improved pedestrian and bicycle accessibility and will help the County prioritize investments in areas that will reduce network gaps and improve overall network connectivity.

# Bicycle Network Gap Analysis



Figure 1. Existing and Proposed Bicycle Network
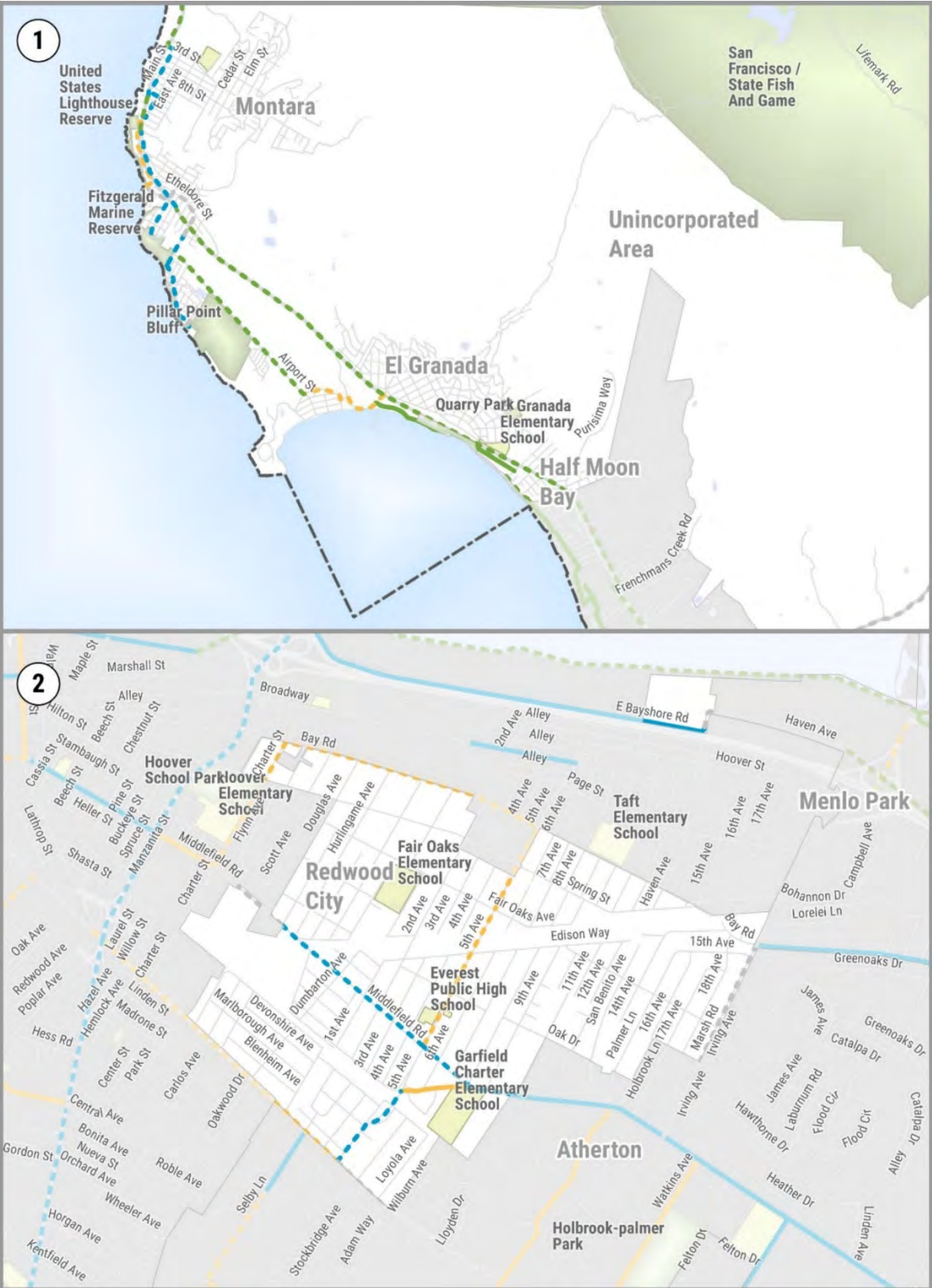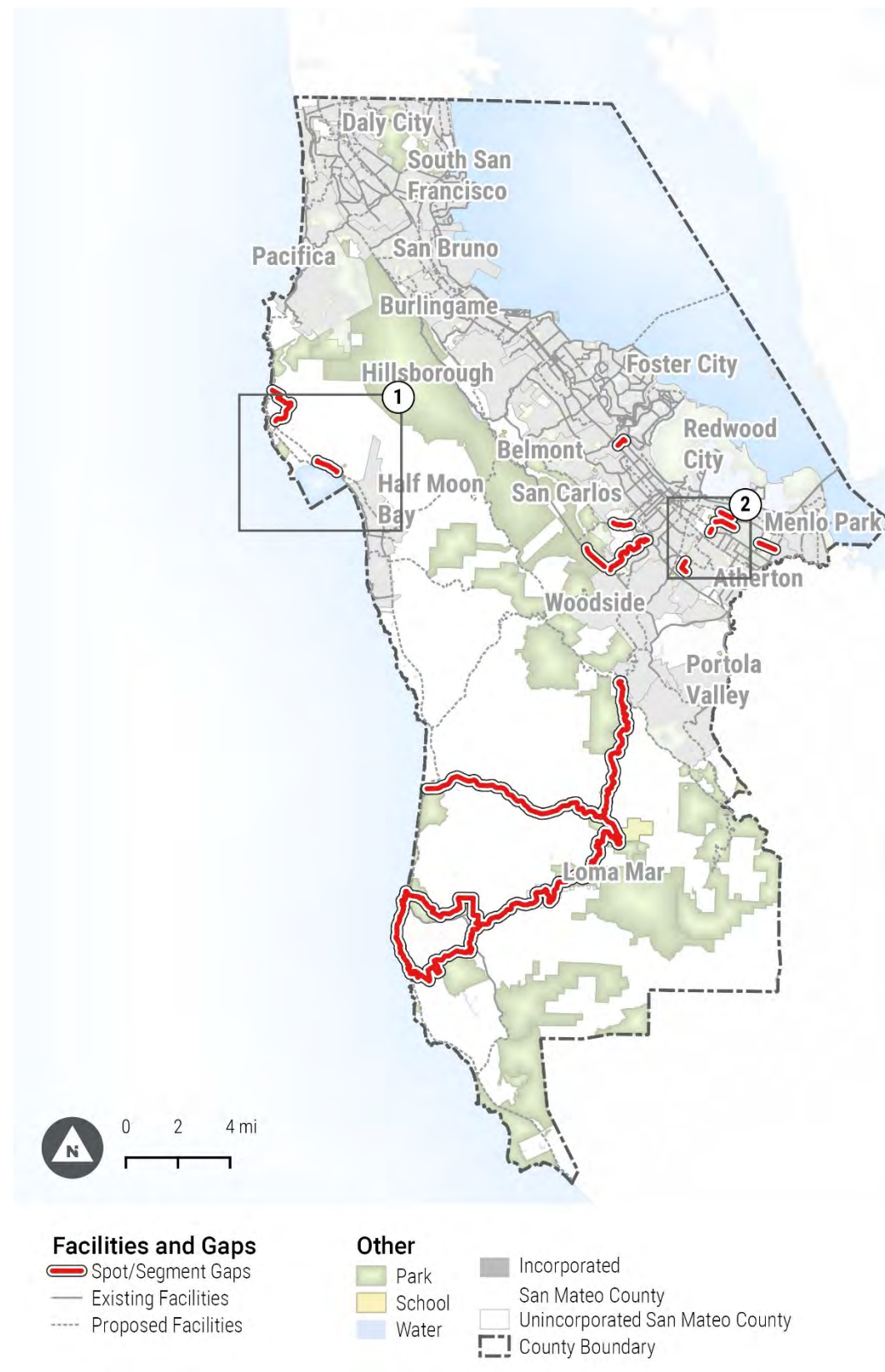
## Existing and Proposed Bicycle Network

The existing bike network and proposed network from the 2011 C/CAG San Mateo County Bicycle and Pedestrian Plan are used as the baseline for this analysis, so it is important to understand the location of these existing and proposed facilities.

San Mateo County's bicycle network consists of bike lanes, bike routes, and trails. Some facilities, such as the California Coastal Trail, are enjoyable for people of all ages and abilities to use. Other facilities, such as bike lanes along major arterials with high traffic volumes and speeds, can be stressful for even the most experienced riders.
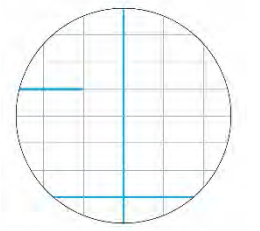
The existing and proposed facilities in Unincorporated San Mateo County are concentrated near North Fair Oaks, the midcoast communities north of Half Moon Bay and Pescadero. Unincorporated San Mateo County provides facilities in more urbanized areas, as well as trails for recreational users.

## Bicycle Network Spot and Segment Gaps

Spot and segment gaps are sections in the network where there are breaks in dedicated bikeway connectivity. These locations occur where there are already missing links between network facilities and are meant to highlight areas that would improve overall connectivity and access.

These gaps are primarily located in the central and south part of the unincorporated areas, including State-managed highways. The gaps in the southern part of the county represent missing links between the east and west sides of the county and would increase access to the coast and recreation areas.

Spot and segment gaps identified include many longer recreational routes in the more rural areas of the county, and shorter gaps in the more urbanized areas.

**Facilities and Gaps**
- Spot/Segment Gaps
- Existing Facilities
- Proposed Facilities

**Other**
- Park
- School
- Water
- Incorporated
- San Mateo County
- Unincorporated San Mateo County
- County Boundary

**Figure 2. Bicycle Network Spot and Segment Gaps**

3
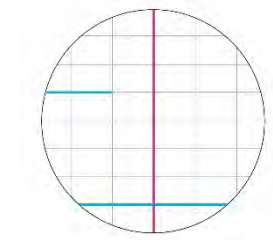
Using Federal Highway Administration (FHWA) facility recommendations and California Manual of Uniform Traffic Control Devices (CA MUTCD) guidelines, the existing bicycle network was assessed to determine if the existing facility is appropriate for bicyclists of all ages and abilities. Bicycle facilities that were identified as high stress are shown in the map.

The largest high stress facility runs along Canada Road from just north of Woodside through Belmont. This represents a key north-south connection. Additional facilities represent smaller gaps throughout the east side of the county.

Upgrading high stress facilities to all ages and abilities facility types can reduce high stress segments and improve network connectivity for all users of ages and abilities.

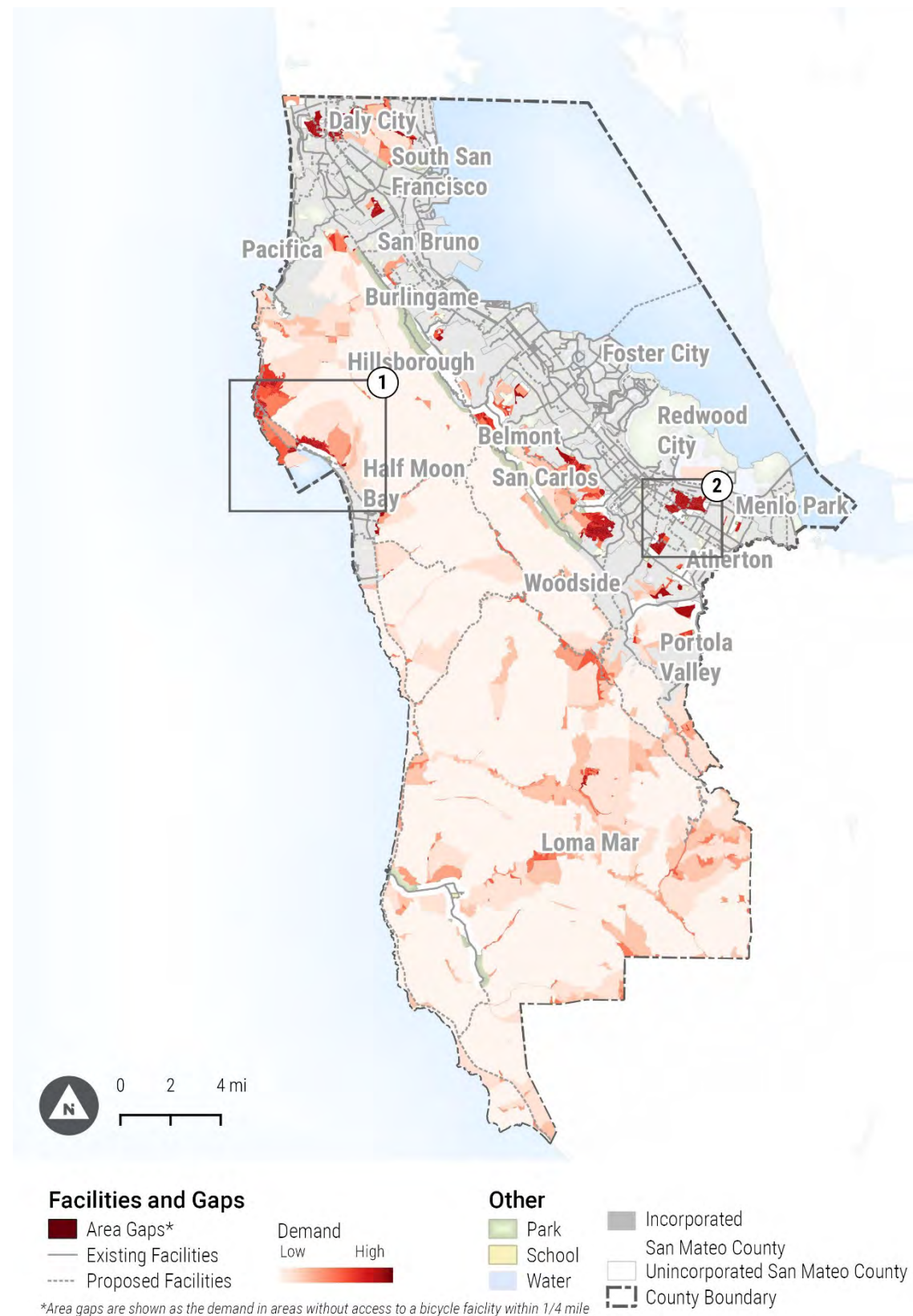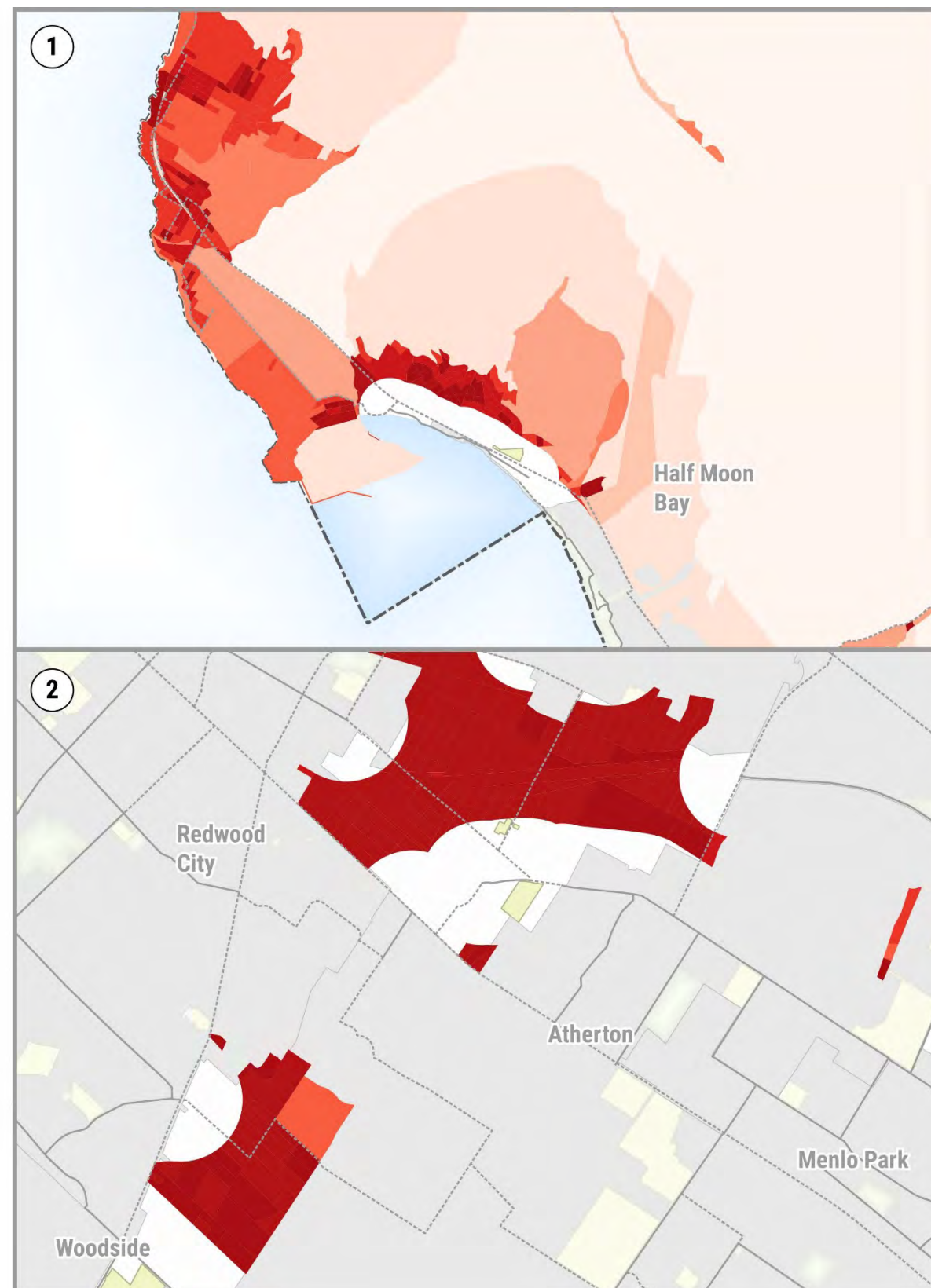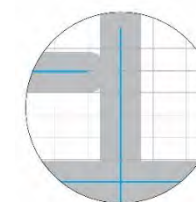**Figure 3. High Stress Bicycle Facilities**

**Facilities and Gaps**

- Area Gaps*
- Existing Facilities
- Proposed Facilities

Demand
Low — High

**Other**
- Park
- School
- Water
- Incorporated
- San Mateo County
- Unincorporated San Mateo County
- County Boundary

*Area gaps are shown as the demand in areas without access to a bicycle faiclity within 1/4 mile

**Figure 4. Bicycle Network Area Gaps**

## Bicycle Network Area Gaps

Area gaps were identified by assessing the areas without access to bicycle facilities (within ¼ mile) and determining the demand for these areas. The goal of identifying these area gaps is to ensure that areas with relatively higher demand have access to bicycle facilities.

### High Demand Areas without Bicycle Access

There are many high demand areas without bicycle access in the north of the county, as well as in areas adjacent to Redwood City, midcoast communities north of Half Moon Bay, North Fair Oaks, Sequoia Tract, and in areas adjacent to San Carlos including Devonshire and Emerald Lake Hills. Additionally, there are some segments in the south of the county that have lower, but contiguous, demand without a facility. The analysis only assesses connections via existing facilities, so some area gaps have a previously proposed facility in the area, which is a good indicator that the previously identified facilities are located in appropriate places.

### Relative Higher Demand Areas without Bicycle Access

When analyzing demand, it's important to assess areas with relatively high demand in addition to those with absolute high demand. Relatively high demand may include medium demand areas surrounded by very low demand areas in rural or lower density contexts. For example, it would be surprising for Loma Mar to have as high a demand as the midcoast are, where multiple small communities are adjacent to each other, but the areas around Loma Mar with relatively higher demand may still be important to the network for that portion of the county.

| 1 **Fitzgerald Marine Reserve Ranger Station** | | | 2 **Maverick's Event Center** | | | 3 **Colma BART** | | |
|---|---|---|---|---|---|---|---|---|
| Direct Access | | Yes | Direct Access | | None | Direct Access | | Yes |
| Bicycle Amenities | | Low | Bicycle Amenities | | Low | Bicycle Amenities | | Medium |
| Bike Mileage | | 0.15 mi | Bike Mileage | | 0.26 mi | Bike Mileage | | 0.15 mi |
| **Overall** | | **Low** | **Overall** | | **Low** | **Overall** | | **High** |

| 4 **Everest Public High School** | | | 5 **West Menlo Park Post Office** | | | 6 **Highway 1 and 8th St Intersection, Montara** | | |
|---|---|---|---|---|---|---|---|---|
| Direct Access | | Yes | Direct Access | | None | Direct Access | | Yes |
| Bicycle Amenities | | Medium | Bicycle Amenities | | Low | Bicycle Amenities | | Low |
| Bike Mileage | | 0.40 mi | Bike Mileage | | 0.25 mi | Bike Mileage | | 0.30 mi |
| **Overall** | | **High** | **Overall** | | **Low** | **Overall** | | **Medium** |

| 7 **La Honda Community Market** | | | 8 **Pescadero Post Office** | | | 9 **Peninsula School** | | |
|---|---|---|---|---|---|---|---|---|
| Direct Access | | Yes | Direct Access | | None | Direct Access | | Yes |
| Bicycle Amenities | | Low | Bicycle Amenities | | Low | Bicycle Amenities | | Low |
| Bike Mileage | | 0 mi | Bike Mileage | | 0.25 mi | Bike Mileage | | 0 mi |
| **Overall** | | **Low** | **Overall** | | **Low** | **Overall** | | **Low** |

| 10 **El Granada Post Office** | | | 11 **Oak Knoll Dr and Canyon Rd Intersection** | | |
|---|---|---|---|---|---|
| Direct Access | | None | Direct Access | | Yes |
| Bicycle Amenities | | Low | Bicycle Amenities | | Low |
| Bike Mileage | | 0.33 mi | Bike Mileage | | 0.26 mi |
| **Overall** | | **Low** | **Overall** | | **Medium** |

## Bicycle Access to Key Destinations
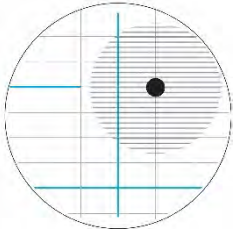


Eleven key destinations were identified by County staff and at public engagement events. Three criteria were used to assess bicycle access:

- **Direct Access**: Evaluates if there is direct bicycle access (a connecting bicycle facility) to the key destination.
- **Bicycle Amenities**: Evaluates the presence of bicycle amenities within 1/8 mile of the key destination and are generally scored into low, **medium** or high categories. Amenities include bike racks, bike repair stations, bike shops, bicycle wayfinding.
- **Bike Mileage**: The sum of bicycle facilities within a 1/8 mile.

A composite overall score was created by considering the above three criteria, assessing if each destination has low, medium, or high bicycle access. Most key destinations have low bicycle access. The destinations with the most bicycle access are Colma BART and Everest High School. The destinations with low and medium bicycle access are distributed fairly equally across the county.
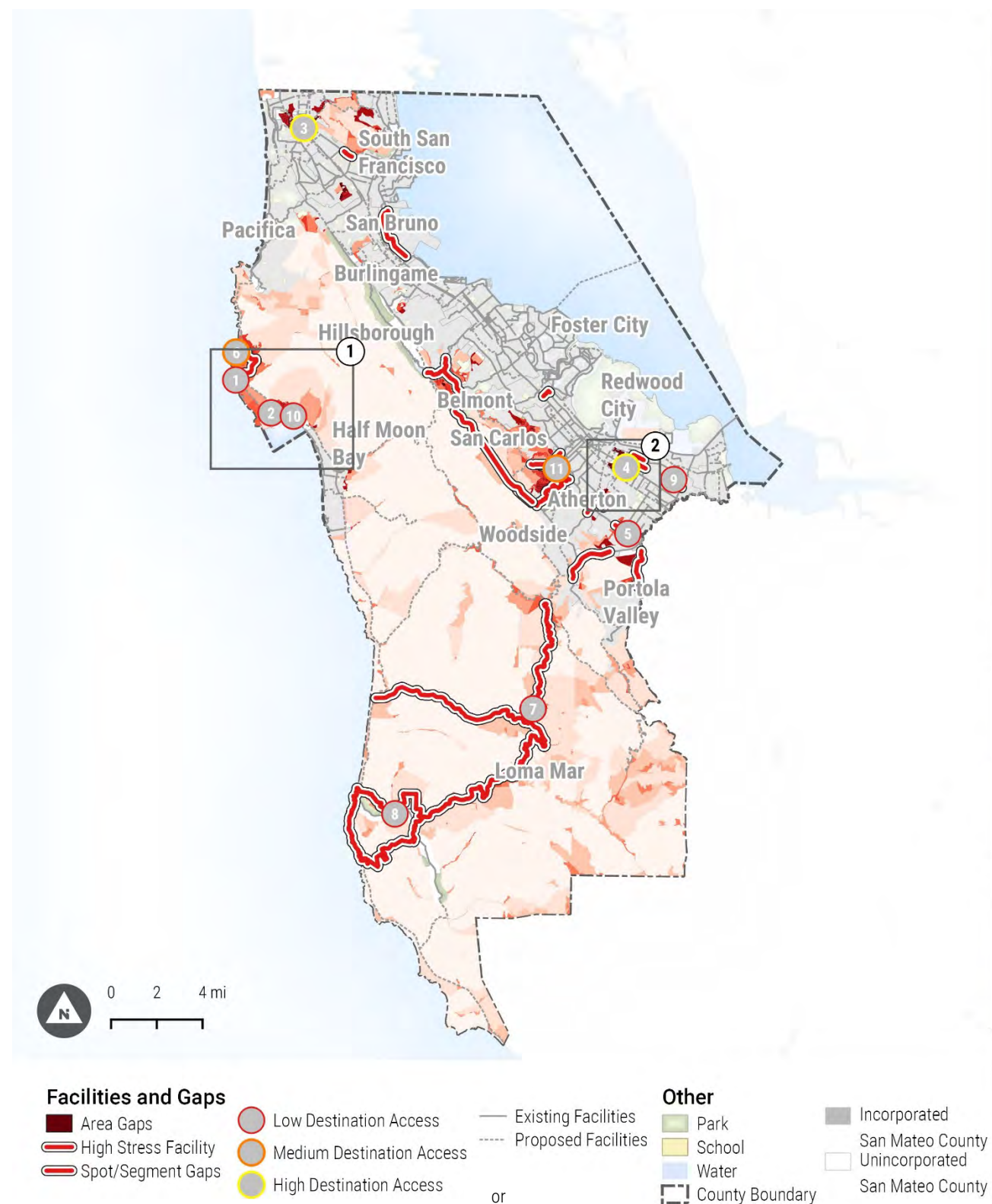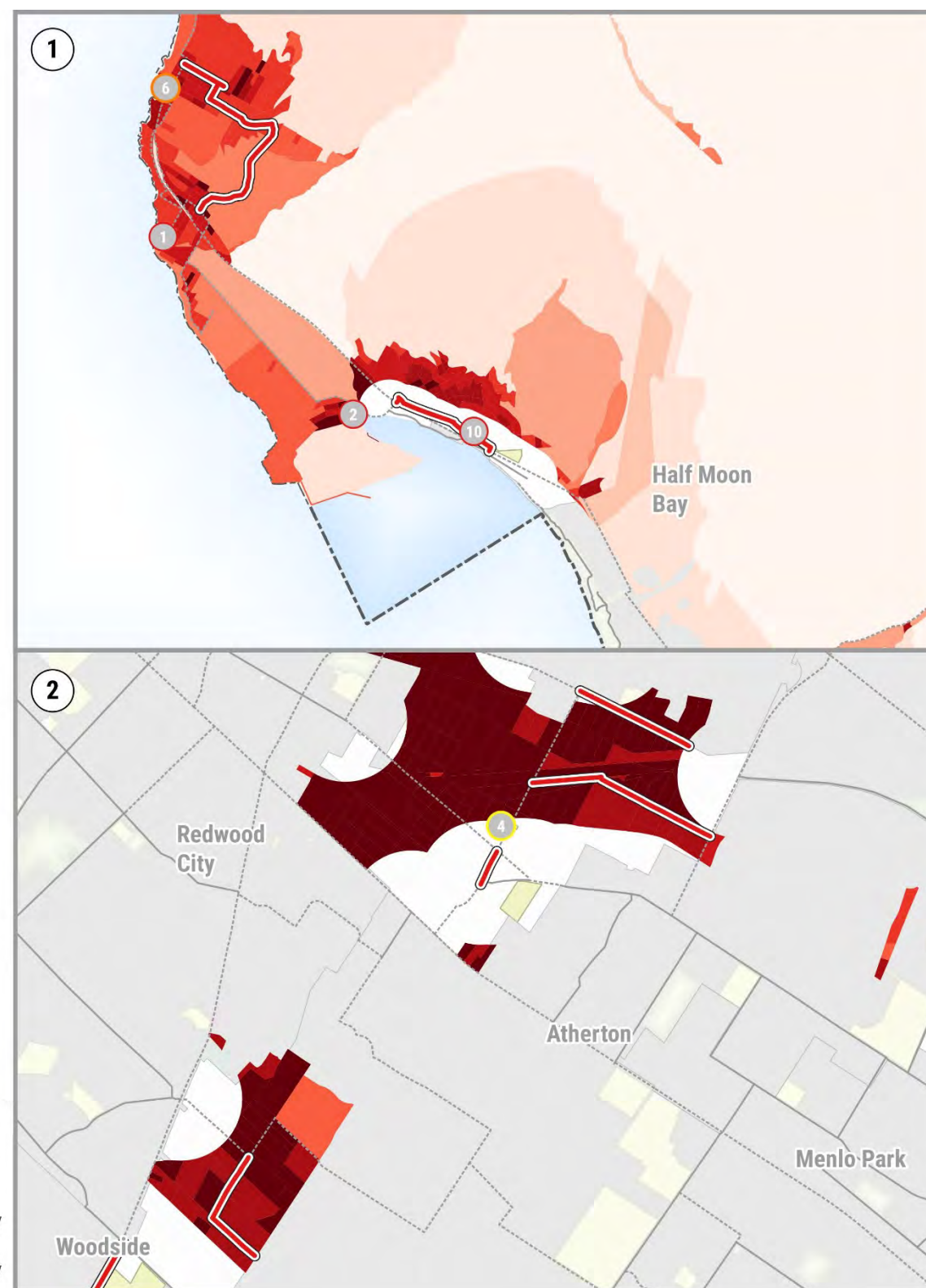
**Figure 5. Bicycle Access to Key Destinations**

Figure 6. Bicycle Network Overall Gaps

## Bicycle Network Overall Gaps

The map illustrates existing high stress facilities, spot and segment gaps, and area gaps (high demand areas without access to a bike facility within 1/4 mile). This helps show how all the bicycle gap analyses can be overlaid to justify potential gap closure recommendations during the development of the updated proposed bikeway network.

The identified gaps are a mixture of utilitarian and recreational gaps. Key gaps include connections from the coast and Pescadero to Portola Valley and north-south connections from Belmont to Emerald Hills. Many of the spot and segment gaps and high-stress facilities are located within area gaps, although there are some high demand areas without bicycle facility access near Daly City as well as some pockets in the central county.

The gaps identified in this analysis will serve as the foundation for the bicycle network. Filling existing network gaps will create a more robust, consistent, and connected network.
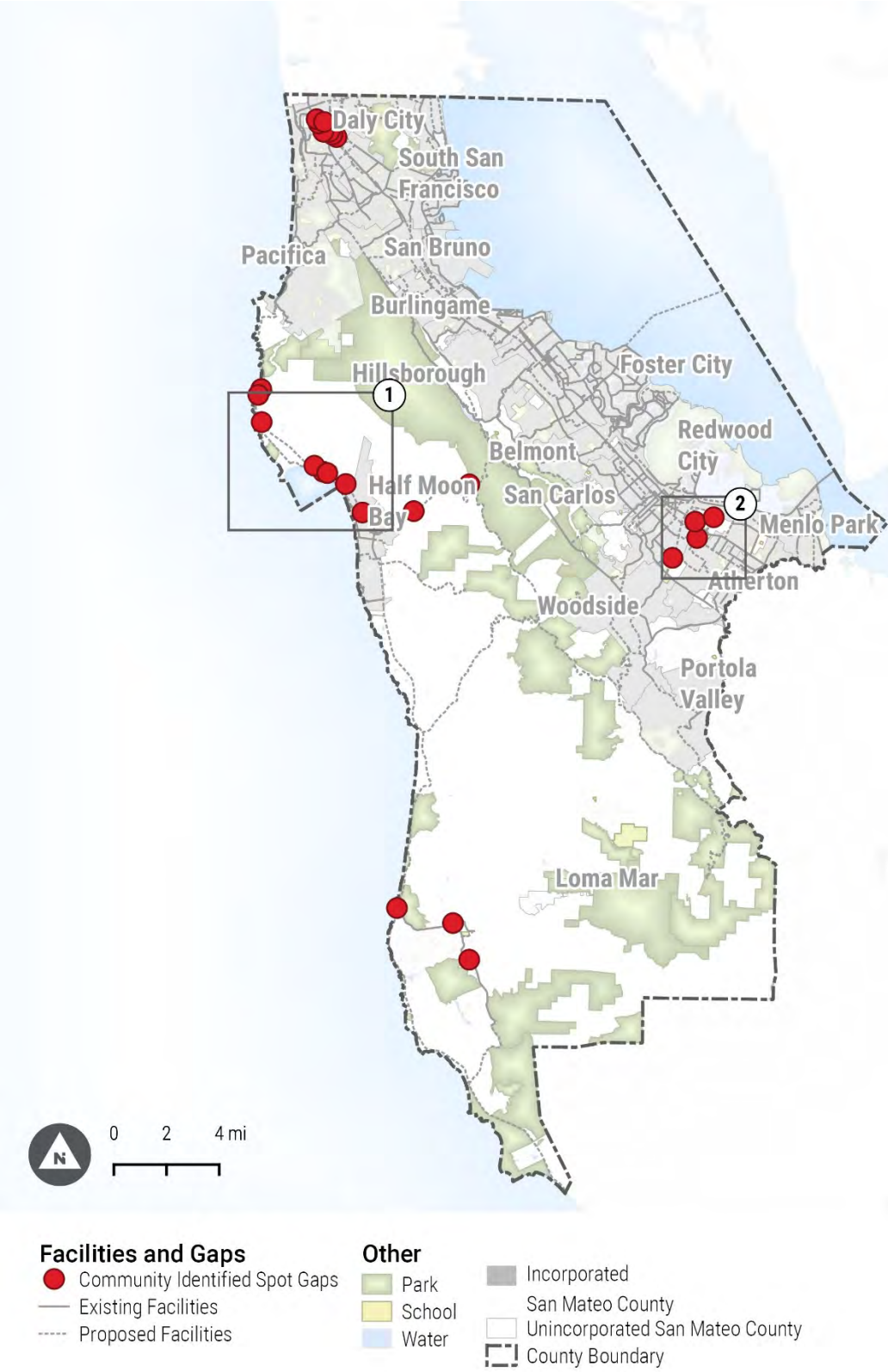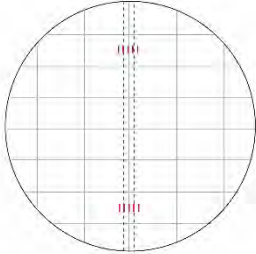
# Pedestrian Network Gap Analysis



**Figure 7. Community-Identified Spot Gaps**

## Community-Identified Pedestrian Spot Gaps

Pedestrian spot gaps were identified through public engagement activities and walking tours in the Colma/Broadmoor and Coastside areas. Pedestrian spot gaps are key areas where community members feel unsafe walking and can therefore be improved by more robust pedestrian infrastructure. Many identified spot gaps relate to major insufficient arterial or highway crossings or sidewalk gaps and are within the vicinity of transit stations, schools, and other local destinations. These community-identified spot gaps illustrate one snapshot of needs across the County and can help to inform the overall themes and trends that will feed into the prioritization of pedestrian improvements.

## Pedestrian Access to Key Destinations

| 1 | **Fitzgerald Marine Reserve Ranger Station** | 2 | **Maverick's Event Center** | 3 | **Colma BART** |
|---|---|---|---|---|---|
| Sidewalk Coverage | Low | Sidewalk Coverage | Low | Sidewalk Coverage | Medium |
| Direct Access | None | Direct Access | None | Direct Access | Yes |
| Crossing Treatments | Low | Crossing Treatments | Low | Crossing Treatments | Medium |
| Lighting | None | Lighting | None | Lighting | Yes |
| Pedestrian Amenities | Low | Pedestrian Amenities | Low | Pedestrian Amenities | Medium |
| **Overall** | **Low** | **Overall** | **Low** | **Overall** | **High** |

| 4 | **Everest Public High School** | 5 | **West Menlo Park Post Office** | 6 | **Highway 1 and 8th St Intersection, Montara** |
|---|---|---|---|---|---|
| Sidewalk Coverage | High | Sidewalk Coverage | High | Sidewalk Coverage | Low |
| Direct Access | Yes | Direct Access | Yes | Direct Access | Yes |
| Crossing Treatments | Low | Crossing Treatments | High | Crossing Treatments | Low |
| Lighting | None | Lighting | Yes | Lighting | None |
| Pedestrian Amenities | Low | Pedestrian Amenities | Low | Pedestrian Amenities | Low |
| **Overall** | **Medium** | **Overall** | **High** | **Overall** | **Medium** |

| 7 | **La Honda Community Market** | 8 | **Pescadero Post Office** | 9 | **Peninsula School** |
|---|---|---|---|---|---|
| Sidewalk Coverage | Low | Sidewalk Coverage | Low | Sidewalk Coverage | Low |
| Direct Access | None | Direct Access | None | Direct Access | None |
| Crossing Treatments | Low | Crossing Treatments | Low | Crossing Treatments | Low |
| Lighting | None | Lighting | None | Lighting | None |
| Pedestrian Amenities | Low | Pedestrian Amenities | Low | Pedestrian Amenities | Low |
| **Overall** | **Low** | **Overall** | **Low** | **Overall** | **Low** |

| 10 | **El Granada Post Office** | 11 | **Oak Knoll Dr and Canyon Rd Intersection** |
|---|---|---|---|
| Sidewalk Coverage | Medium | Sidewalk Coverage | Medium |
| Direct Access | Yes | Direct Access | Yes |
| Crossing Treatments | Low | Crossing Treatments | Low |
| Lighting | None | Lighting | None |
| Pedestrian Amenities | Low | Pedestrian Amenities | Low |
| **Overall** | **Medium** | **Overall** | **Medium** |

**Figure 8. Pedestrian Access to Key Destinations**

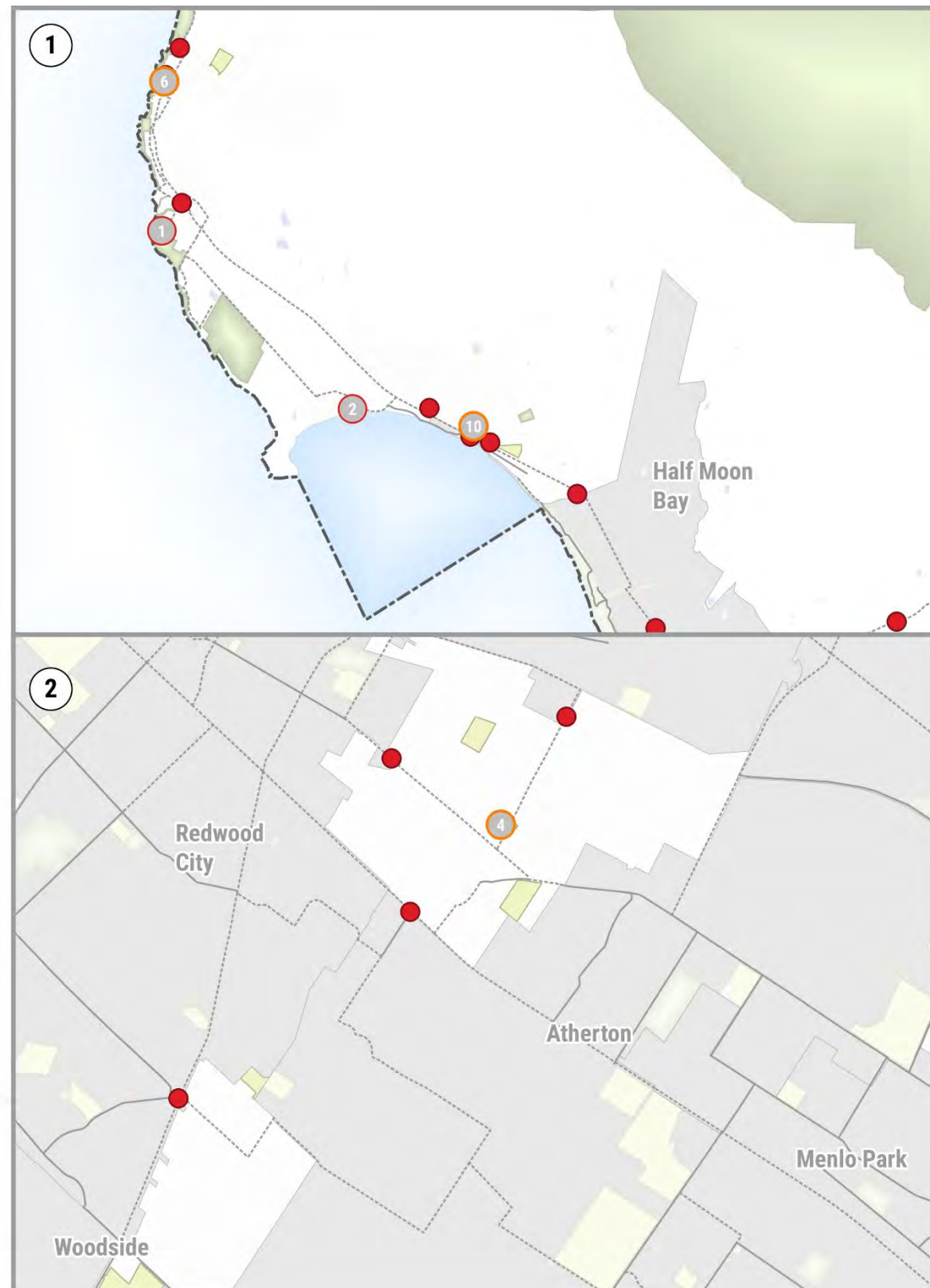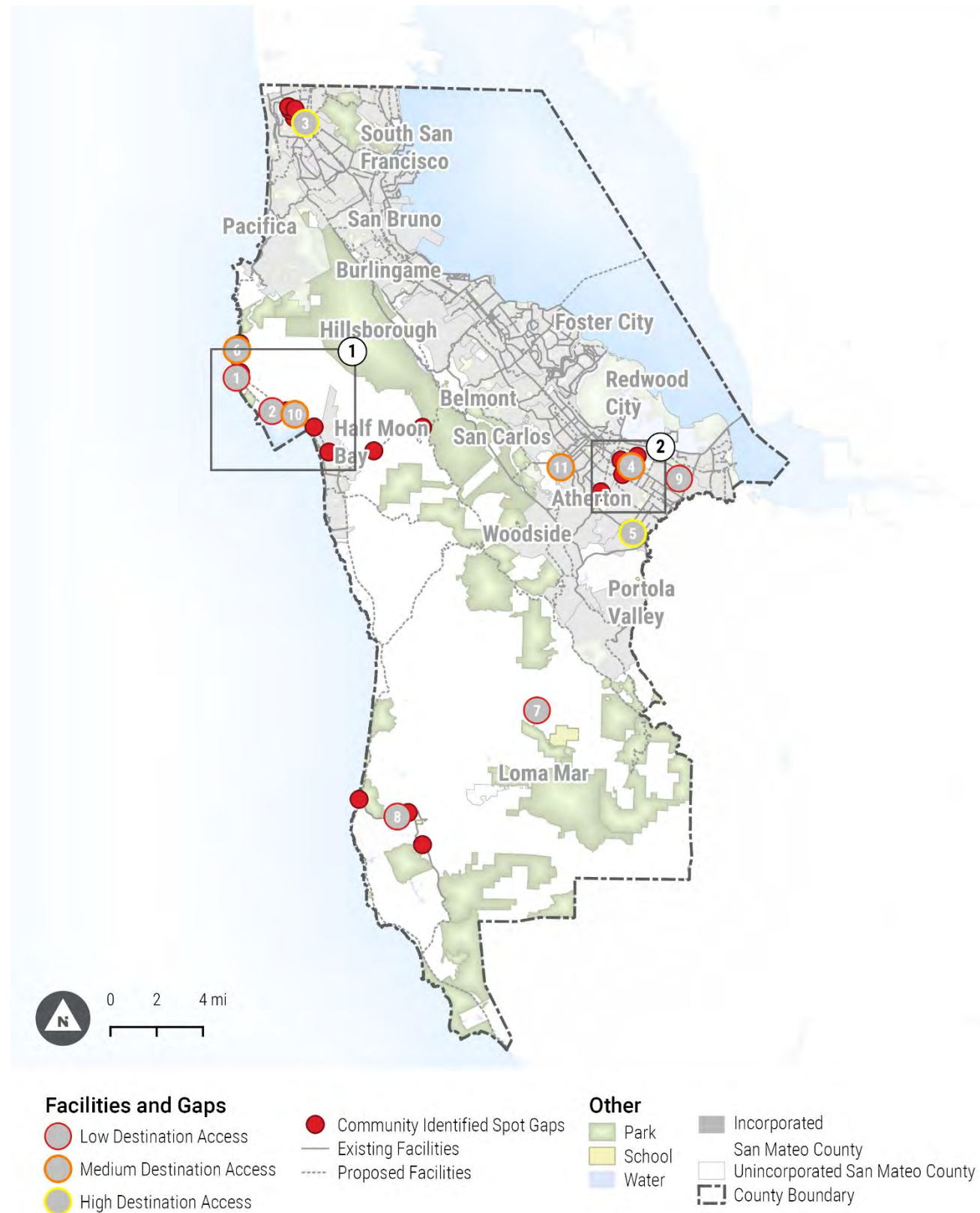## Pedestrian Access to Key Destinations



Eleven key destinations were identified by County staff and at public engagement events. Six criteria were used to assess pedestrian access:

- **Sidewalk Coverage:** Evaluates sidewalk coverage within 1/8 mile of the destination.
- **Direct Access**: Evaluates if there is direct pedestrian access to the key destination via a sidewalk.
- **Crossing Treatment Adequacy**: Evaluates if the nearest crossings have context-appropriate crossing treatments.
- **Lighting**: Assesses the presence of lighting within a 1/8 mile of the key destination.
- **Pedestrian Amenities**: Evaluates the presence of pedestrian amenities within 1/8 mile of the key destination. Amenities include seating, drinking fountains, trash receptacles, shade and signage.

As assessed, the Colma BART Station area and West Menlo Park Post Office have the highest overall pedestrian access. The remaining destinations were overall low and medium and were disbursed throughout the county.

## Overall Pedestrian Gaps

Community-identified pedestrian spot gaps and key destinations with low pedestrian access are concentrated in four areas throughout the county: Coastside, North Fair Oaks, Pescadero, and Broadmoor. These identified gaps and key themes around safe crossings, recreational access and school access will be the baseline for network improvements. These identified gaps do not necessarily capture all pedestrian needs but are rather a means to help understand and generate solutions to key pedestrian issues in the County.

**Facilities and Gaps**

- Low Destination Access
- Medium Destination Access
- High Destination Access
- Community Identified Spot Gaps
- Existing Facilities
- Proposed Facilities

**Other**
- Park
- School
- Water
- Incorporated
- San Mateo County
- Unincorporated San Mateo County
- County Boundary

## Summary and Next Steps

This gap analysis identifies areas where the existing bicycle and pedestrian networks may not be meeting the needs of all users. These gaps are concentrated in urbanized areas like North Fair Oaks and midcoast communities as well as in more rural areas like Pescadero and Woodside. This range of gaps is indicative of the range of needs of bicyclists and pedestrians throughout the County, suggesting that recommendations will need to take these differences into consideration. Another key takeaway is that most pedestrian gaps are along roadways with existing or proposed bicycle facilities, showing that bicycle and pedestrian networks are very related, potentially necessitating larger complete streets projects. Addressing these projects together where possible can be an effective and efficient method for project implementation.

The gaps identified in this analysis will feed directly into the bicycle and pedestrian study networks, which will serve as the base for project recommendations.